2+2=4

SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL NO : | | | | | | | | | | | | |

Total number of pages:[2]

May 2018

Reappear

2015 Batch onwards.

B.Tech. || ECE || 5th Sem.

DIGITAL SIGNAL PROCESSING

Subject Code :BTEC-501A

Paper ID : _____

Time allowed: 3 Hrs

Max Marks: 60

Important Instructions:

- All Questions are Compulsory.
- Assume any missing data

PART A (2×10)

Q. 1	Short Answer Questions.
(a)	What is the need of digital signal processing systems? Elaborate.
(b)	What are basic discrete time signals? Show their graphical representation.
(c)	What are basic operations performed on discrete time sequences? Explain with the help of examples.
(d)	What do understand by twiddle factor? List and brief its properties.
(e)	What are different ways to represent a discrete time system? Give example of each.
(f)	What is the physical significance of discrete fourier transform? What is its use?
(g)	What are FFT algorithms? List and brief.
(h)	What do understand by Z transform and region of convergence? Describe.
(i)	Differentiate between FIR and IIR filters?
(j)	Draw the structural diagram of following discrete time system: $y(n)+3y(n-1)+4y(n-4)=3x(n)+4x(n-3)$

PART B (5×8)

Q. 2.	What are basic building blocks of DSP based systems? Explain with the help of diagram. OR Find the DFT of the given sequence **x(n)= { 1,1, -1, 1, 1, 0 , -1, 1 }**	CO1
Q. 3.	What are different applications areas of digital signal processing? Explain in detail different application areas. OR What are different techniques to find the convolution of given two sequences? Find the linear convolution of following sequences **x1(n)= { 1,2, -1, 1, 1, 0 , -1, 2 } and x2(n)= { 2,1, -1, -1, 0 , 1 }**	CO1
Q. 4.	What are different techniques to find the inverse Z transform? Explain in detail. OR What are the criteria of linearity, stability and causality of discrete time systems? Explain with the help of examples.	CO2
Q. 5.	What do understand by linear phase FIR filters? Explain the design of FIR filters using window technique. OR What are different design techniques for the IIR filters? Explain in detail.	CO3
Q. 6.	What are finite precision effects? Differentiate between Fixed point and Floating point representations and arithmetic in DSP processors. OR Explain the internal architecture and basic instructions of digital signal processor of ADSP or TMS series.	CO4