SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL NO : | | | | | | | | | | | | | **Total number of pages:[2]**

B.Tech. || ECE || 5th Sem. (RP)

DIGITAL SIGNAL PROCESSING

Subject Code :BTEC-502

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)	Differentiate between analog and digital signal processing.
(b)	Write and explain the basic equation of discrete fourier transform.
(c)	Find convolution of sequences x(n)={1 , -1 , 1} and h(n)= { 1 , 2, 1}
(d)	Differentiate FIR and IIR filters?
(e)	What are difference equations and their use? Give example.
(f)	What do understand by structures? Explain with the help of example.
(g)	What are basic discrete time signals and their operations? Brief on it.
(h)	What is Z transform? Write its basic equation?
(i)	State and prove time shifting property of Z-transform.
(j)	Differentiate between causal and non-causal discrete time systems.

PART B (5×8)

Q. 2.	What are basic building blocks of digital signal processing based system? Explain with the help of diagram OR Find the DFT of the given sequence **x(n)= { -1, 2, -1,0, 2, 1 , -1, 1 }**	CO1

Q. 3.	Find the Z transform and its region of convergence of following signal x(n)= {1, -1 , 2, -1, 1} OR How Z transform is used to solve the difference equations? Explain with the help of example.	CO2
Q. 4.	What are different design techniques for FIR filters? Explain any one in detail. OR What are different design techniques for IIR filters? Explain any one in detail.	CO3
Q. 5.	What are finite precision effects? What is difference between fixed point and floating point representations used in processors? OR What are special features of digital signal processors? Explain in detail with reference to their architecture and programming features.	CO4
Q. 6.	What are FFT algorithms? Explain in detail the decimation in time FFT algorithm. OR Find the DFT of following sequence using FFT algorithm and draw its flow diagram: x(n)={1, -1 , 0 , 1, 2, 1, -1 , 1}	CO1