

# Assignment (Dr. Siddhant Singh)

Subject: Digital Signal Processing

Branch: ECE

Class: B.Tech (5<sup>th</sup> Sem)

- Q 1. Differentiate between Discrete Time Fourier Transform (DTFT) and Discrete Fourier Transform (DFT) of a sequence. Determine the DFT of the 4-point discrete sequence  $x(n) = \{1, 2, 3, 4\}$  using DFT transformation matrix.
- Q 2. What is the difference between circular convolution and linear convolution with example? Explain circular convolution.
- Q 3. Explain various properties of the DFT in brief.
- Q 4. What are the major factors which affects our choice of specific realization? Discuss frequency sampling structure for FIR systems.
- Q 5. An analog signal is sampled at 10 KHz and the DFT of 512 samples is computed. Determine the frequency spacing between spectral samples of the DFT.