**Introduction**

Introduction to MATLAB environment: Command Window, Variables, Constants, Scalars, Matrices and Vectors, Functions, Comments, Command History, Workspace, Editor, Script file etc.

**Experiment 1-A**

Write a MATLAB program to plot the discrete sine wave with given amplitude, frequency, phase, sampling frequency and length of the sequence. Also observe first alias.

**Experiment 1-B**

Write a MATLAB program for generation of DT unit impulse, step, and ramp sequence for a given initial time, final time and start of sequence.

**Experiment 1-C**

Write a MATLAB program for generation of an audio tone with given amplitude, frequency, phase,

sampling frequency and length of the sequence. Store it in .wav file with given sampling frequency and BitsPerSample, read back and play the audio file.

Use in-built functions: audiowrite, audioread, audioplayer, play.

**Experiment 2**

1. Find rational Transfer function H(z) = B(z)/A(z) of given DT LTI systems analytically.
2. Write a MATLAB program to find and plot pole-zero pattern in z-plane, to determine stability, to find and plot unit impulse and unit step responses, to find and plot magnitude and phase responses (Frequency response plots) if the given system is stable.
3. Accumulator

Z-1

x(n)

y(n)

1. Filter

1/3

Z-1

y(n)

-1/2

x(n)

Z-1

Note: Use inbuilt functions: tf2zpk, zplane, isstable, impz, freqz.