DSP LAB-29

- Generating elementary signals like Unit Step, Ramp, Exponential, Sine, and Cosine sequences.

- Demonstrates the effect of sampling, aliasing.

- Show that the highest rate of oscillation in a discrete-time sinusoidal is obtained
when ω=π.

- Consider the analog signal $x_a(t) = 3\cos(100\pi t)$.
  ⟹Sampling it at 200 Hz and 75 Hz. Show the discrete-time signal after sampling. -> realization.

- Consider the analog signal: $x_a(t) = 3\cos(2000\pi t) + 5\sin(6000\pi t) + 10\cos(12000\pi t)$. Show the effect of sampling rate.

- The impulse response of a discrete-time LTI system is h(n)={u(n)-u(n-5)}.
  ⟹Determine the output of the system for the input x[n]=u(n), using the convolution sum.
- Given x(n)=[1,3,-2,4] y(n)=[2,3,-1,3], z(n)=[2,-1,4,-2]
  ⟹Find the correlation between x(n) & y(n) and y(n) & z(n). ⟹ observe the realization.

- Filter realization using 6-point averaging, 6-point differencing equations.

- DFT of $x_n(t) = \sin(2\pi \cdot 1000t) + 0.5\sin(2\pi \cdot 2000t + \frac{3\pi}{4})$.
  ⟹Also DFT with window + window function realization.

- Design a low pass FIR filter to remove high-frequency noise from a signal using convolution.