	Independent University Bangladesh (IUB) School of Engineering, Technology and Sciences (SETS) Department of Electrical and Electronic Engineering Autumn 2020 EEE 321LAB

Lab 3: Study on signal manipulation

Objectives:

1. Performing the signal addition, multiplication, division and scaling using MATLAB.
2. Obtaining the magnitude, real part, imaginary part and phase angle of a complex signal using MATLAB.

Labwork:

1. Generate the following signals. Use *stem* function to plot **x[n]** and **comment** on the results in each case.
   (a) **x[n] = u(n+1)+u(n-2)** where **$-5 \le n \le 5$** (addition)
   (b) **x[n] = δ(n+3)+2δ(n-2)** where **$-5 \le n \le 5$** (addition and scaling)
   (c) **x[n] = n/u(n-2)** where **$-5 \le n \le 5$** (division)
   (d) **x(n) = n[u(n) – u(n –5)]** where **$-5 \le n \le 5$** (multiplication)
   (e) **$x(n) = n^2 u(n+2)$** where **$-5 \le n \le 5$** (scaling)
   (f) **x[n] = u(n+1)- 2δ(n-2)** where **$-5 \le n \le 5$** (addition and scaling)
   (g) **$x(n) = n[u(n) – u(n –5)] + 10e^{-0.5(n-5)}$**, where **$-5 \le n \le 5$** (scaling)

2. Obtain the magnitude (*abs*), real part (*real*), imaginary part (*imag*) and phase angle (*angle*) of the following complex signal. Plot the magnitude, real part, imaginary part and phase angle of **x[n]** and **comment** on the results in each case.
   (a) **$x(n) = e^{-j0.5(n-5)}$**, where **$-10 \le n \le 10$**
   (b) **$x(n) = e^{j0.5(n+5)}$**, where **$-10 \le n \le 10$**

Lab Assignment-3: Develop a MATLAB function that will convert analog signal into a digital / discrete signal.