Lab Exercise 1

Ex. 1) Generation of continuous signals using Python (Note: use plot function)

a) sine b) cosine c) sawtooth wave d) Square wave e) Triangular

Ex. 2) Generation of discrete signals using Python(Note: use stem function)

a) impulse b) step c) ramp d) Exponentially growing Signal e) Exponentially decaying signal

Ex. 3) Generate continuous time and discrete time signal for the following

(a) $y = \sin(t)$

(b) $y = \cos(2\pi t)$

(c) $y = \cos(5t + \sin(2t))$

Ex. 4) Consider the following length 7 sequences defined for $-3 \leq n \leq 3$

x[n] = [3 -2 0 1 4 5 2], y[n] = [0 7 1 -3 4 9 -2], w[n] = [-5 4 3 6 -5 0 1]. Generate the following sequences

a) u[n] = x[n] + y[n], b) v[n] = x[n].w[n], c) s[n] = y[n] – w[n], and d) r[n] = 4.5y[n]

Ex. 5) Generate the sequences

a) $x[n] = \sin(0.6\pi n + 0.6\pi)$ b) $x[n] = 2\cos(1.1\pi n - 0.5\pi)$ c)x[n] = n modulo 6

Note:

1) **All exercises must be implemented using Jupyter Notebook. (Language:python)**

2) **Please do all sub questions in a single Jupyter notebook only.**

2) **Install and import all necessary packages based on the task given.**

3) **Indicate all steps clearly with explanation.**

4) **After execution download .pdf and .ipynb file which includes code, explanation as well as output.**