Signal & System Lab (EC-395)

ASSIGNMENT: 1

NAME:.....
..... **YEAR :** ..... **SEC :** ..... **ROLL NO.:**
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DATE of EXPERIMENT:
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[1] Generation of an sinusoidal sequence with frequency of 0.02 Hz and to plot 50 samples (where sampling frequency is 1Hz). Phase is pi/2 and amplitude is 5 v.

THEORY:

$x[n] = \sin(2\pi fn + \varphi)$ where all terms carrying their usual meaning.

- We can obtain a discrete-time signal by sampling a continuous-time signal at equally spaced time instants, $t_n = nT_S$ and the sampled signal can be written as:

$x[n] = x(nT_S) \quad -\infty < n < \infty$

- The individual values $x[n]$ are called the samples of the continuous time signal, $x(t)$.
- The fixed time interval between samples, T_S, is also expressed in terms of a sampling rate f_s (in samples per second) such that: $f_s = 1/T_S$ samples/sec.

-: SOURCE CODE:-

-: OUTPUT and Discussion:-

[2] To Generate a sinusoidal sequence with frequency of 3/20 Hz and to plot 80 samples (where sampling frequency is 1Hz). Assuming phase and amplitude to be entered by the user.

THEORY:

Same as above.

-: SOURCE CODE:-

-: OUTPUT and Discussion:-

[3] To generate four sinusoidal sequences of phase shift of 0°,130°,180° and 360° and plot them together using "SUBPLOT" comment. Assuming amplitude to be entered by the user.

THEORY:

"Sinusoids"is a collective term referring to both sine and cosine functions. A sinusoid is a function of time having the following form: $x[n] = \sin(2\pi fn + \varphi)$ where φ is initial phase (radians).

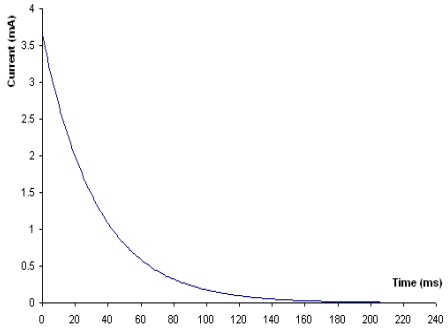
-: SOURCE CODE:-

-: OUTPUT and Discussion:-

[4] To write a program to generate an exponential sequence K*(a^n) with a=0.8 and number of samples to be entered by the user. Assuming amplitude to be entered by the user.

THEORY:

Y=exp(X) the exp function is an elementary function that operates element-wise on arrays. Its domain includes complex numbers. Y=exp(X) returns the exponential for each element of X.



-: SOURCE CODE:-

-: OUTPUT and Discussion:-