Lab – 3

Subject Code: EC303 P

Due Date:2/9/2020

Instructions:

1. Please mention legends, axis labels, titles etc in your plot/subplot for better understanding & clarity.
2. The report to be submitted must include matlab code & all observations pertaining to each plot below the same.
3. Kindly number your answers correctly.
4. **NO PLAGIARISM.**
5. Ask any questions in class or via LMS so that it will be beneficial to all (us and you).

Questions:

1. Consider a signal $x_1(t) = 5 + 3\cos\left(2\pi 50t + \frac{\pi}{8}\right) + 6\cos\left(2\pi 300t + \frac{\pi}{2}\right)$
    a) Plot the amplitude spectrum of the signal $x_1(t)$.
    b) Plot the phase spectrum of the signal $x_1(t)$.

2. Consider a signal $x_2(t) = 2\cos(2\pi 5t) * \cos(2\pi 100t)$.
    a) Plot the time domain representation of the signal $x_2(t)$.
    b) Plot the amplitude spectrum of the signal $x_2(t)$.

3. Consider a signal $x_3(t) = (1 + 0.5\cos(2\pi 5t)) * \cos(2\pi 100t)$.
    a) Plot the time domain representation of the signal $x_3(t)$.
    b) Plot the amplitude spectrum of the signal $x_3(t)$.
    c) Compare the results obtained in 2(b) and 3(b). Write your observations.
    d) Corrupt the signal $x_3(t)$ with white gaussian noise signal having zero mean and variance=9. Consider the length of noise signal same as the length of signal $x_3(t)$.
    e) Plot the corrupted signal in time domain.