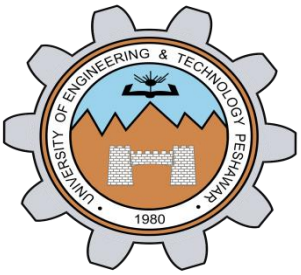
Lab Report No 5



Digital Signal processing

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Date: 21/1/2022

Section: A

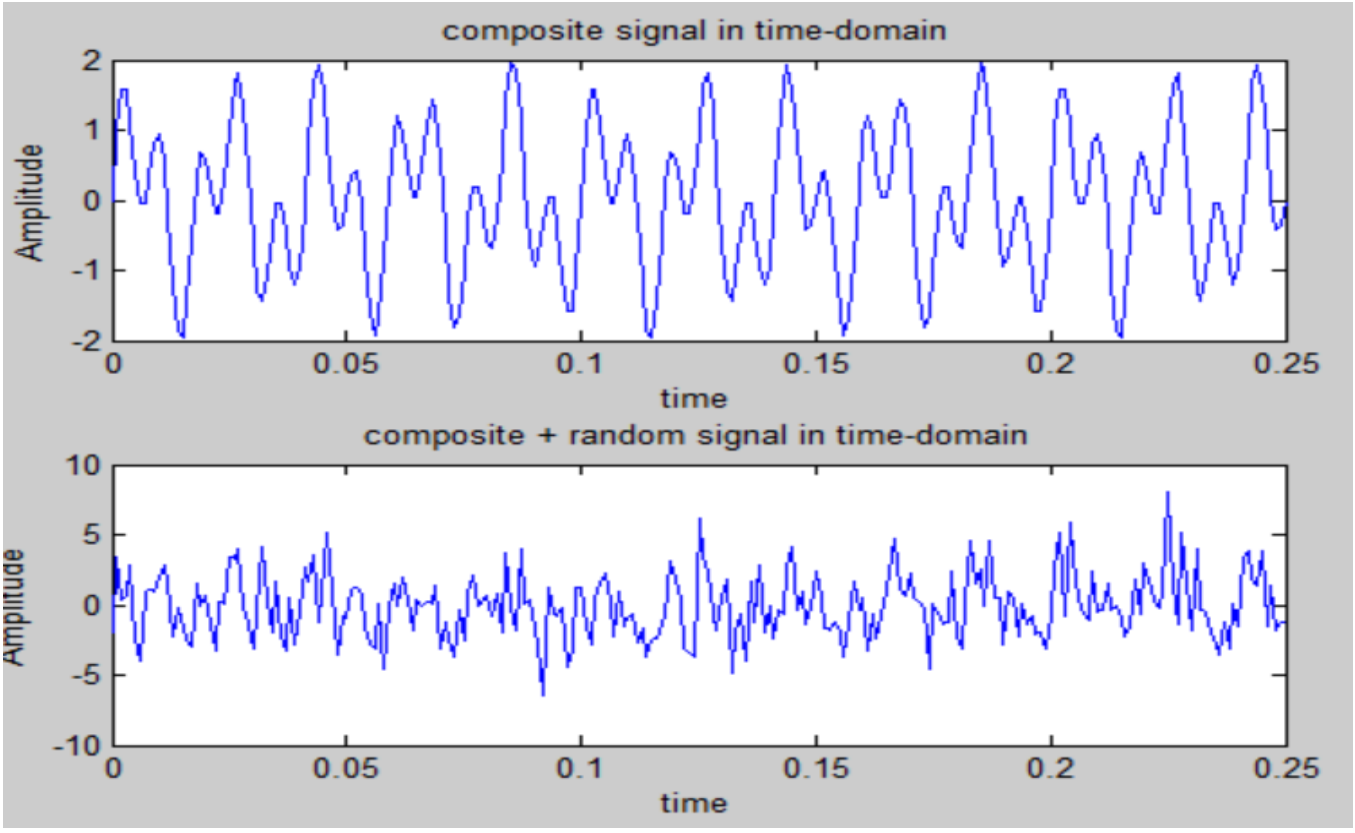
"On my honor , as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this

Task no 1: -

First part of the task is to simply plot composite sinusiods over the time t.

```
  %code: -
clear all
close all
t=0:1/1000:0.25;
x= sin(2*pi*50*t) + sin(2*pi*120*t);
subplot(211);
plot(t,x);
title('composite signal in time-domain');
    xlabel('time');
    ylabel('Amplitude');
```

Plot: -

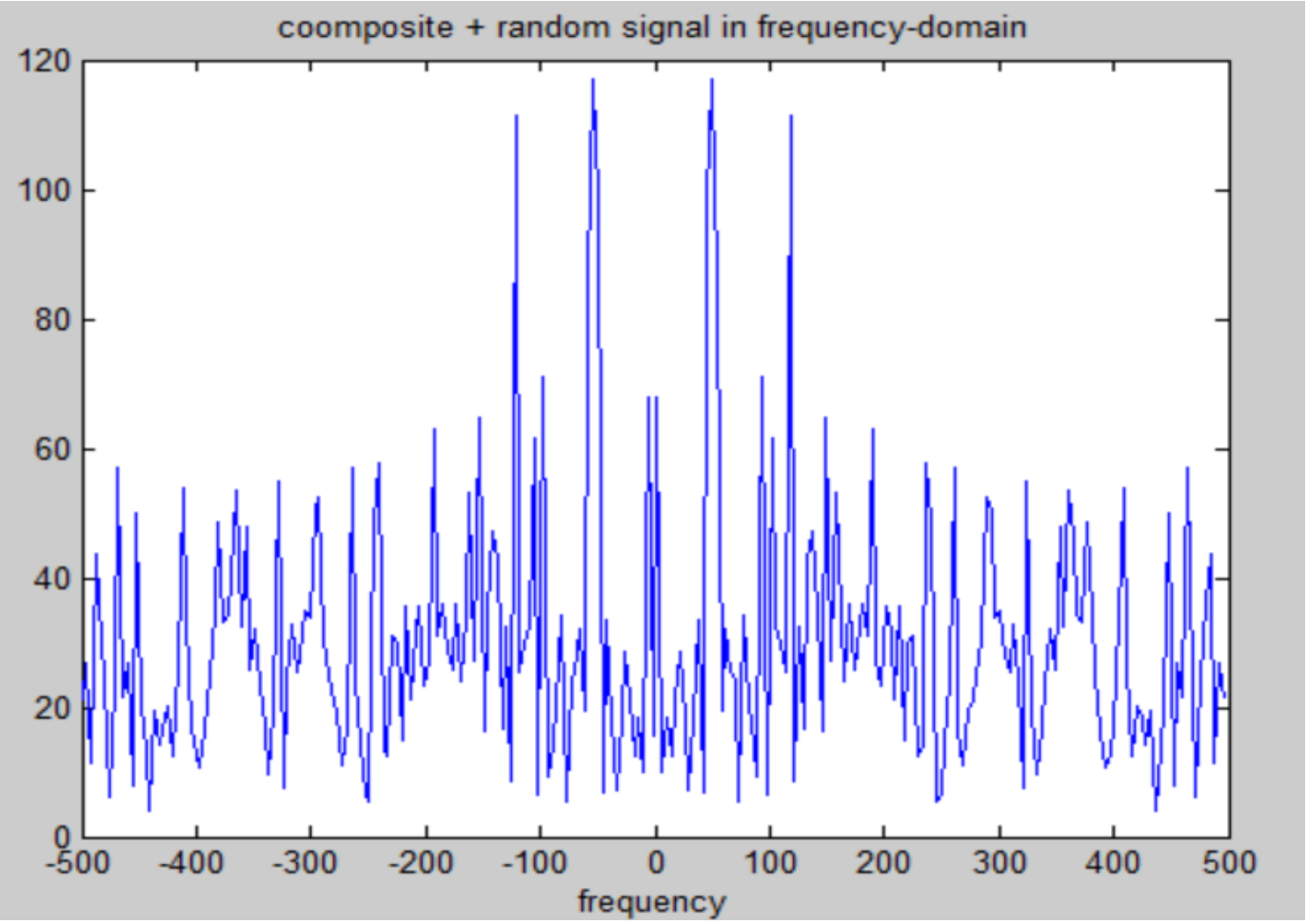


Task no 2: -

Second part of the task is to add 2 division random signal to composite sinusiods over the time t.

```
%code: -
y=x + 2*randn(size(t));
subplot(212);
plot(t,y);
title('composite + random signal in time-domain');
    xlabel('time');
    ylabel('Amplitude');
```

Plot: -



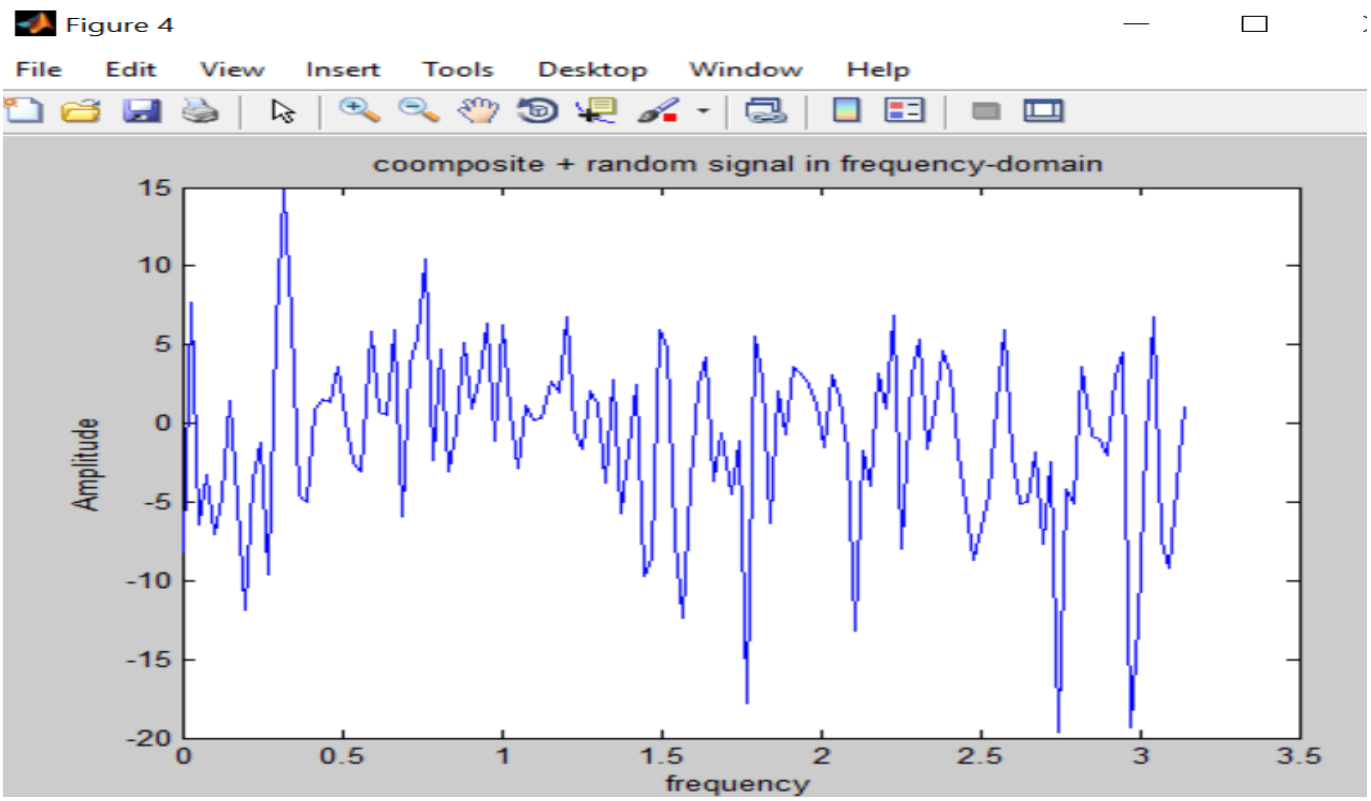
Task no 3: -

Third part of the task is to find fast fourier transform of resultant signal.

%code: -

```
figure;
n=length(y);
ft=fft(y,n);
shiftf=(fftshift(ft));
absvalue=abs(shiftf);
fshift=(-n/2:n/2-1)*(1000/n);
plot(fshift,absvalue);
title('coomposite + random signal in frequency-domain');
   xlabel('frequency');
   ylabel('Amplitude');
```

Plot: -



Task no 4: -

fourth part of the task is to find the actual result, density of fft signal and plot its graph against shifted frequency

```
%code: -
figure;
density=shiftf.*conj(shiftf)/n; % power of signal shiftf
plot(fshift,density);
title('density of signal in time-domain');
figure;
[p,w]=periodogram(y,rectwin(n));
plot(w,10*log10(p));
title('coomposite + random signal in frequency-domain');
   xlabel('frequency');
   ylabel('Amplitude');
```

Plot: -