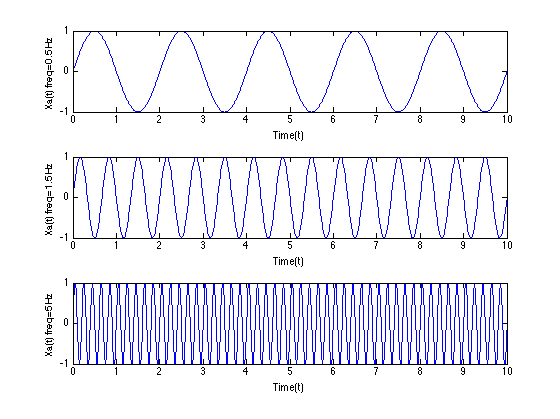
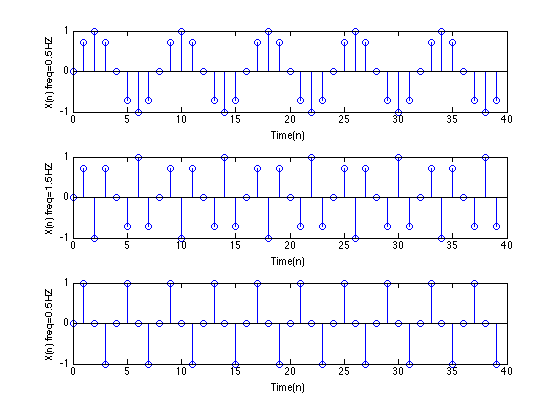
Matlab question 1-

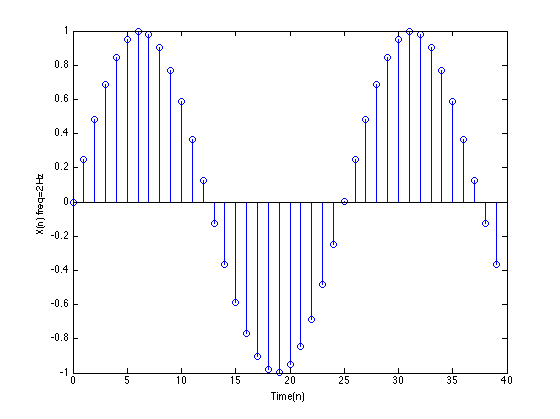
Part a)

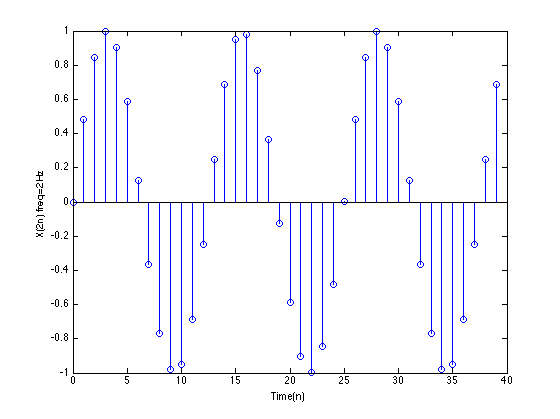


Part b)



Part c)



Part d)

%1-part a

figure;

t=0:0.01:10;

f0\_1=0.5;

Xo=sin(2\*pi\*f0\_1\*t);

subplot(3,1,1), plot(t,Xo);

xlabel('Time(t)');

ylabel('Xa(t) freq=0.5Hz');

f0\_2=1.5;

X\_1=sin(2\*pi\*f0\_2\*t);

subplot(3,1,2), plot(t,X\_1);

xlabel('Time(t)');

ylabel('Xa(t) freq=1.5Hz');

f0\_2=5;

X\_2=sin(2\*pi\*f0\_2\*t);

subplot(3,1,3), plot(t,X\_2);

xlabel('Time(t)');

ylabel('Xa(t) freq=5Hz');

%1-part b

figure;

Fs = 4;

n= 0:1:39;

f0\_1=0.5;

Xn\_0=sin(2\*pi\*(f0\_1/Fs)\*n);

subplot(3,1,1), stem(n,Xn\_0);

xlabel('Time(n)');

ylabel('X(n) freq=0.5HZ');

f0\_2=1.5;

Xn\_1=sin(2\*pi\*(f0\_2/Fs)\*n);

subplot(3,1,2), stem(n,Xn\_1);

xlabel('Time(n)');

ylabel('X(n) freq=1.5HZ');

f0\_3=5;

Xn\_2=sin(2\*pi\*(f0\_3/Fs)\*n);

subplot(3,1,3), stem(n,Xn\_2);

xlabel('Time(n)');

ylabel('X(n) freq=0.5HZ');

%1-part c

figure

n= 0:1:39;

Fs = 50;

f0\_c=2;

Xn\_c=sin(2\*pi\*(f0\_c/Fs)\*n);

stem(n,Xn\_c);

xlabel('Time(n)');

ylabel('X(n) freq=2Hz');

%1-part d

figure

n= 0:1:39;

Fs = 50;

f0\_d=2;

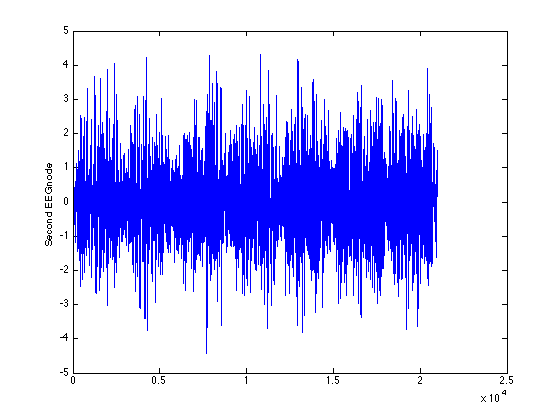
Xn\_d=sin(2\*pi\*(f0\_d/Fs)\*2\*n);

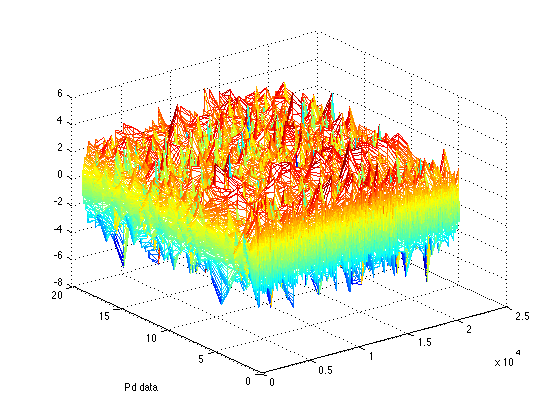
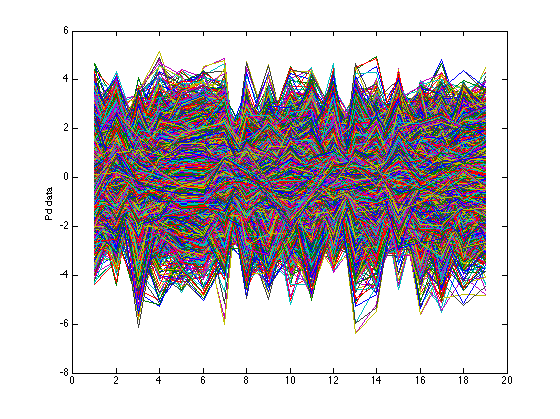
stem(n,Xn\_d);

xlabel('Time(n)');

ylabel('X(2n) freq=2Hz');

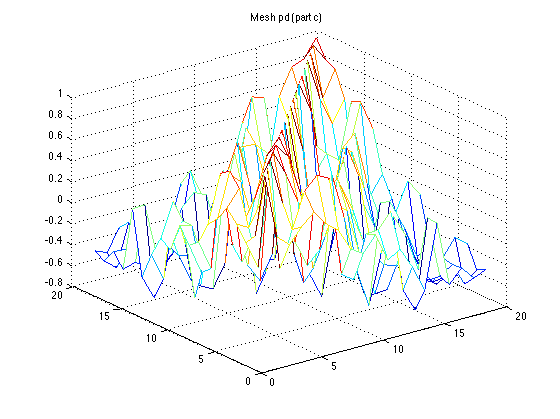
Problem 2)

Part a)

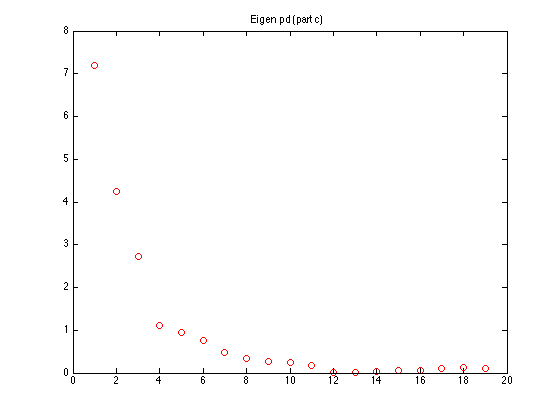


Part c)

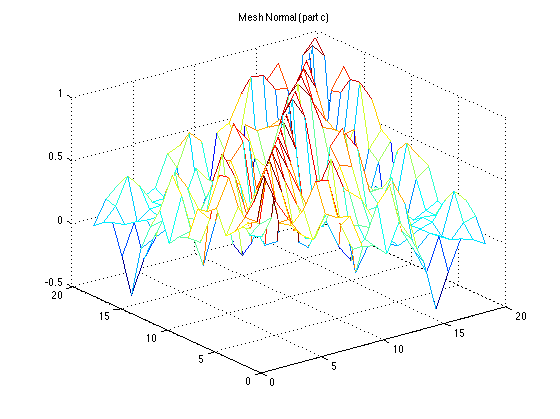
Mesh for pd (rest)



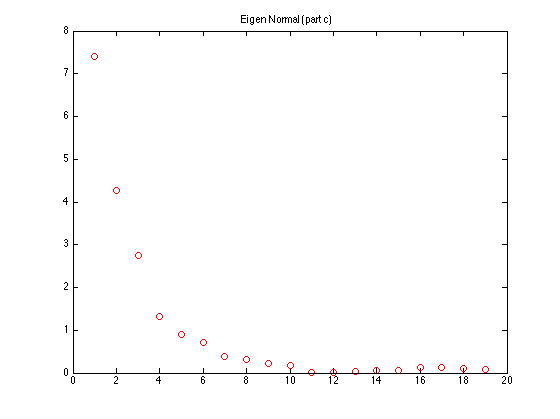
Eigen for pd (rest)



mesh for normal data (rest):

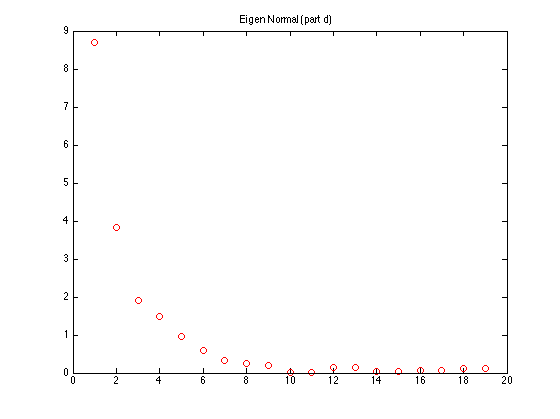
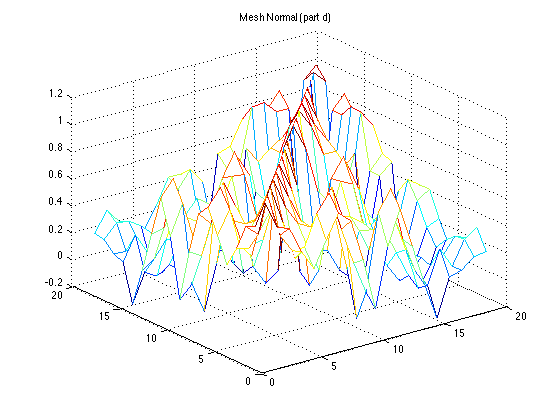


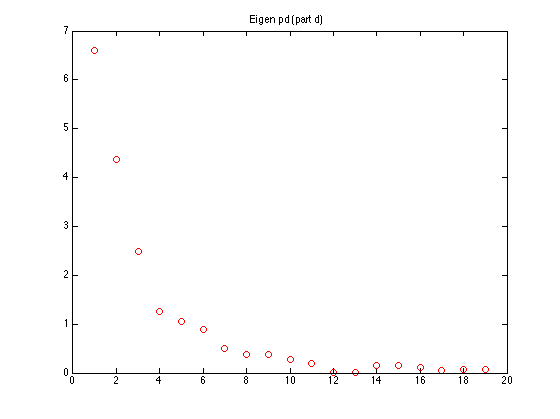
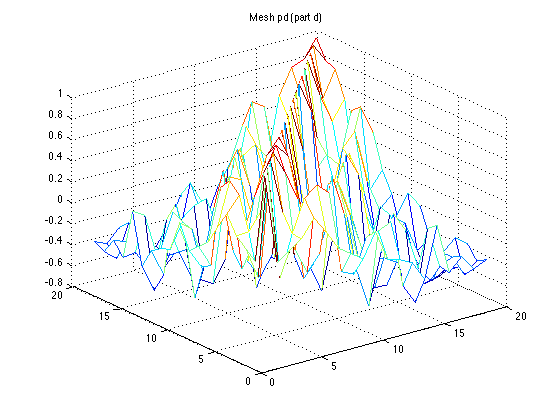
Eigen for normal data (rest):



Part d)

Mesh for normal data (squeeze)





%2-part a

load('/Users/rohamsameni/Dropbox/summer 2013/466/problems/pdData.mat');

%plotting second EEG node

figure,plot(data(2,:));

ylabel('Second EEG node');

%plotting data

figure,plot(data);

ylabel('Pd data');

figure,mesh(data);

ylabel('Pd data');

%2- part b for pd

%Separating the data into the rest part and the squeezing part

[ind\_0]=find(ampVec==0);

[ind\_1]=find(ampVec==1);

%2- part c for pd

data\_rest=data(:,ind\_0);

R\_c=corr(data\_rest’);

figure, mesh(R\_c);

eigen\_c= eig(R\_c);

figure,plot(eigen,'bo');

%2- part d for pd

data\_squeez=data(:,ind\_1);

R\_d=corr(data\_squeez’);

figure, mesh(R\_d);

eigen\_d= eig(R\_d);

figure,plot(eigen\_d,'bo');

load('/Users/rohamsameni/Dropbox/summer 2013/466/problems/normalData.mat');

%2- part b for normal

%Separating the data into the rest part and the squeezing part

[ind\_0]=find(ampVec==0);

[ind\_1]=find(ampVec==1);

%2- part c for normal

data\_rest=data(:,ind\_0);

R\_c=corr(data\_rest’);

figure, mesh(R\_c);

eigen\_c= eig(R\_c);

figure,plot(eigen,'bo');

%2- part d for normal

data\_squeez=data(:,ind\_1);

R\_d=corr(data\_squeez’);

figure, mesh(R\_d);

eigen\_d= eig(R\_d);

figure,plot(eigen\_d,'bo');