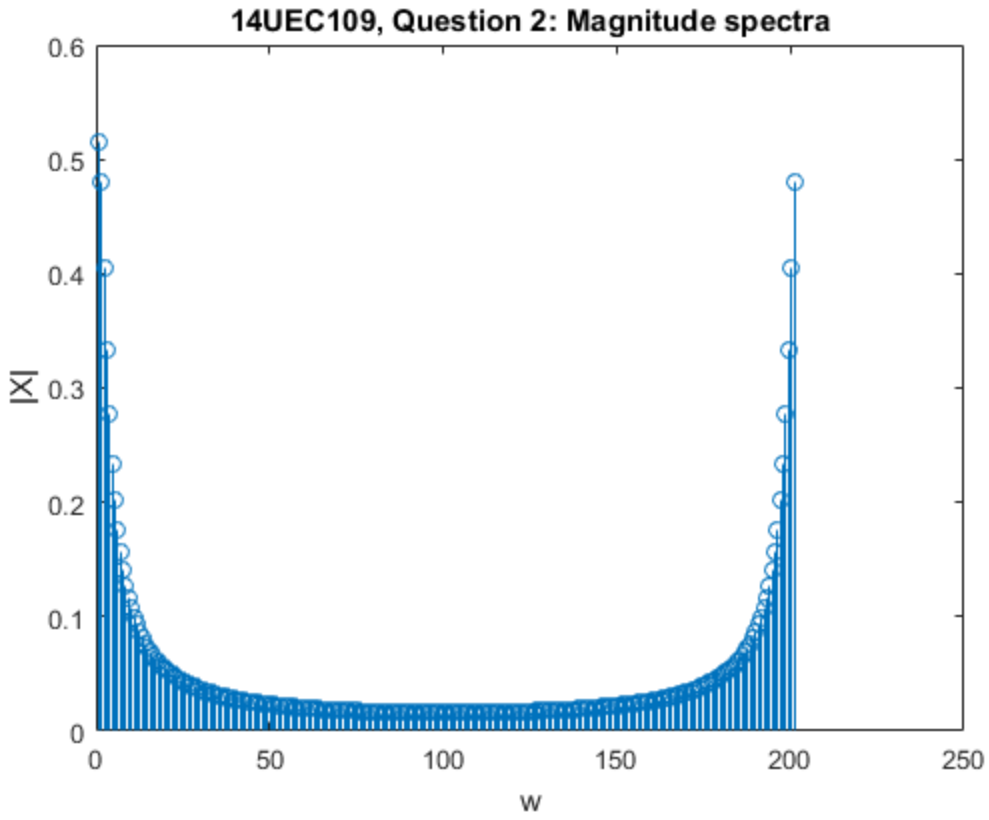
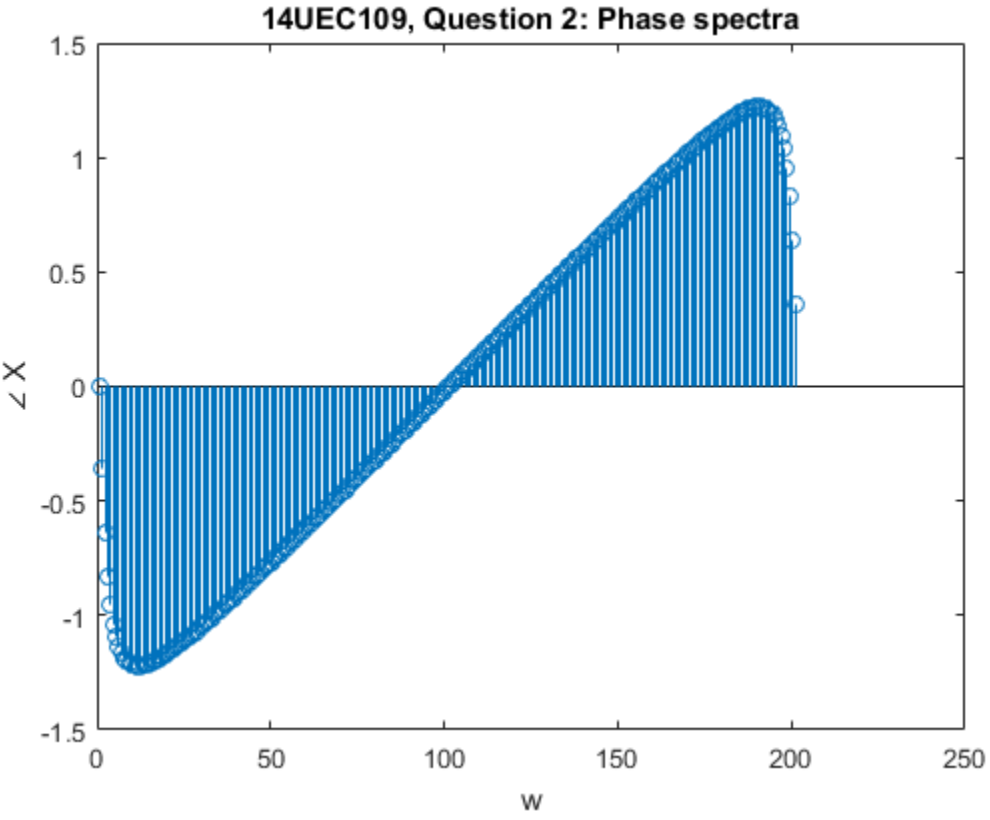
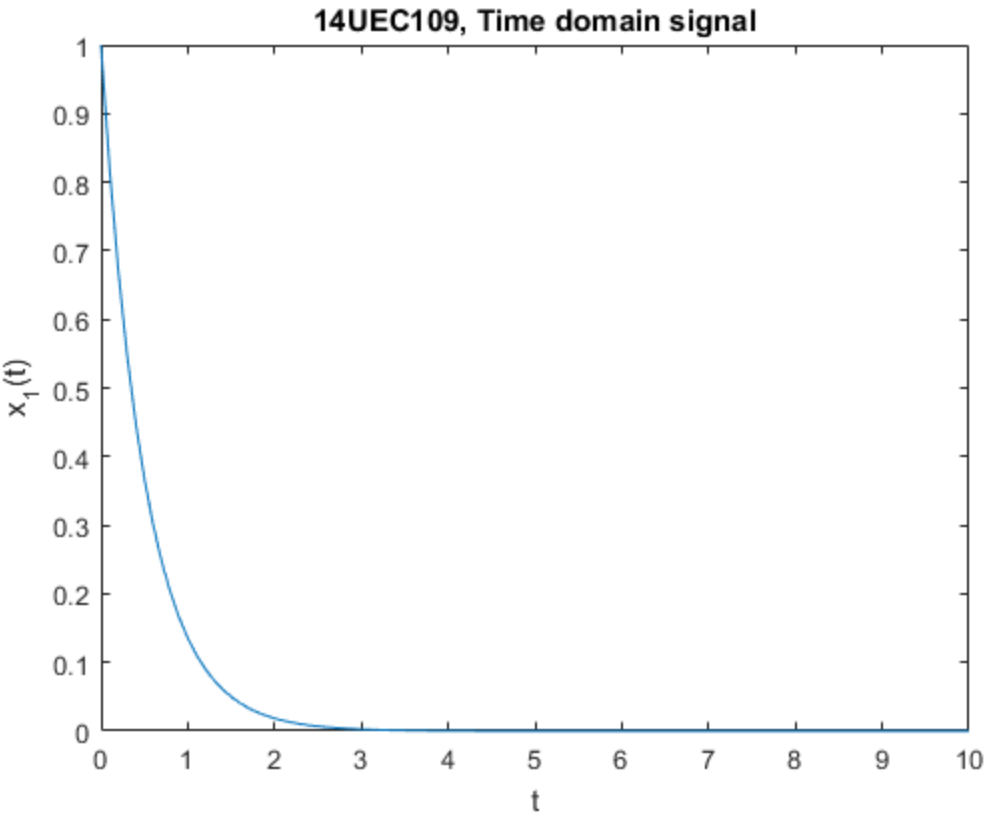
```
%Question 2: Plot the magnitude and phase spectra with T0 = 8 and Ts =
 1/32 and compare with previous result


close all;  %close all open windows generated previously
clc;        %clear the command window
clear all;  %clear the variables

T0 = 8;       %Time period of signal
Ts = 1/32;    %Sampling interval
N = T0/Ts;    %Total number of samples
w0 = 2*pi/T0; %Frequency of signal


X = zeros(256,1);%Rth sample of frequency domain representation of
 signal
for r = 1:1:256  %taking 256 samples
    for k = 0:1:N-1%k is the index of summation from k equals 0 to N-1
        %For the rth sample of the fourier transform, X_r=X(rw0):
        X(r) = X(r) + Ts*exp(-2*k*Ts)*1*exp(-j*(r-1)*w0*k*Ts);
    end;
end;

r = 1:1:256;     %r is the index for 256 samples of Xr
w = r.*w0;       %Frequency varies with r
t = 0:0.1:10;    %Time array

x1 = exp(-2.*t)*1;     %Time domain aperiodic signal x1(t).u(t)=1 for
 all t.

figure(1)                              %Figure for the magnitude sectrum
stem(w,abs(X))                         %Discrete plot for |X(w)| vs w
xlabel('w')                            %Label for X-Axis of the plot
ylabel('|X|')                          %Label for Y-Axis of the plot
title('14UEC109, Question 2: Magnitude spectra') %Title for plot

figure(2)                              %Figure for the phase sectrum
stem(w,angle(X))                       %Discrete plot for phase of
 X(rw0)vs w
xlabel('w')                            %Label for X-Axis of the plot
ylabel('\angle X')                     %Label for Y-Axis of the plot
title('14UEC109, Question 2: Phase spectra')     %Title for plot

figure(3)                              %Figure for the phase sectrum
plot(t,x1)                             %Continuous plot for time domain
 signal x1(t)
xlabel('t')                            %Label for X-Axis of the plot
ylabel('x_1(t)')                       %Label for Y-Axis of the plot
title('14UEC109, Time domain signal')%Title for plot
```


14UEC109, Question 2: Magnitude spectra
|X|
w
0
0.1
0.2
0.3
0.4
0.5
0.6
0
50
100
150
200
250


14UEC109, Question 2: Phase spectra
∠X
w
-1.5
-1
-0.5
0
0.5
1
1.5
0
50
100
150
200
250



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