```matlab
%Exercise1,Q3.FTT using fc assumed to be 0.5
close all; %close figures
clear all; %clear workspace
clc;        %clear command window

fs = 15; % Sample frequency
T = 1/fs; % Sample period
tn = [0 : T : 3]; % Time vector with samples spaced T seconds appart
fc = 0.5; % Frequency of the sinusoid
theta = 2*pi/3; % Phase of the sinusoid
cn = cos(2*pi*fc*tn + theta); % Construct the sinusoid

figure(1)    %first plot
plot(tn, cn); % Plot the sinusoid
xlabel('T_n'); %label of x-axis
ylabel('C_n');   %label of y-axis
title('Original signal, 14UEC109'); %title of graph
grid on;      %switch on grid in the plot

N = 2^12; % FFT size
f = ([0 : N - 1]/N - 0.5)*fs; % The frequency vector for plotting
C = fftshift(fft(cn,N)); % Compute the FFT and rearrange the output

figure(2)    %second plot
plot(f, 10*log10(abs(C))); % Plot the magnitude of the spectrum on a
 log scale
xlabel('f');%label of x-axis
ylabel('10log_1_0|C|');%label of y-axis
title('Magnitude plot of spectrum on log scale, 14UEC109');%title of
 graph
grid on;%switch on grid in the plot
```
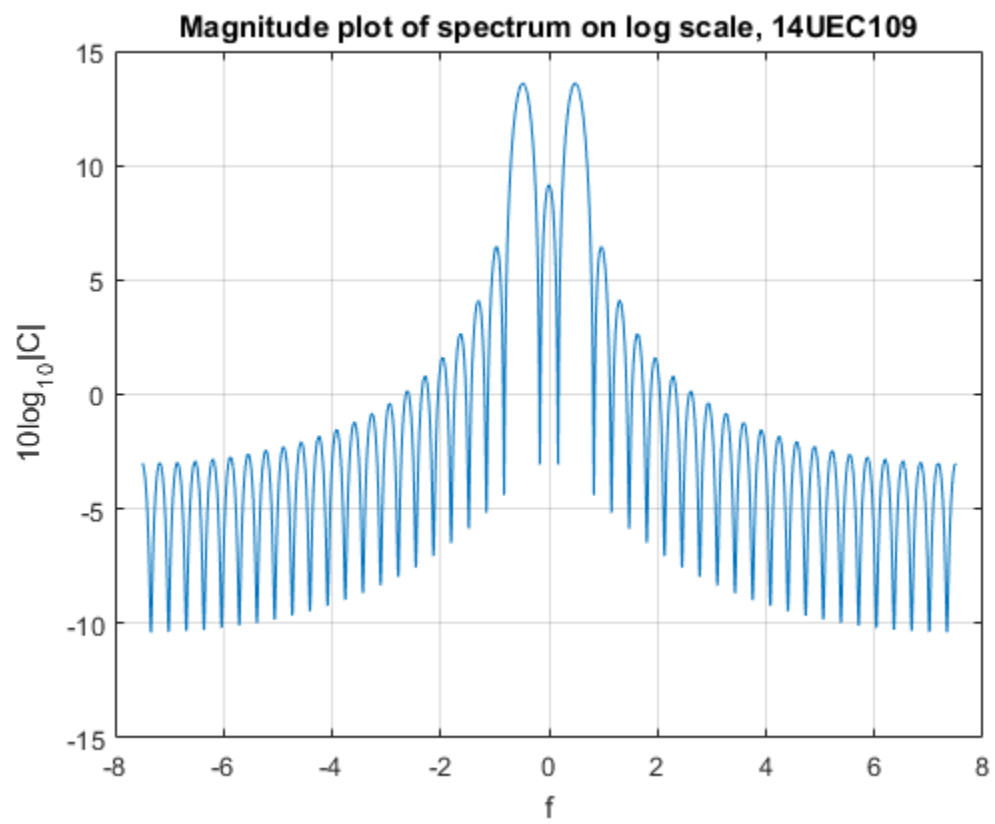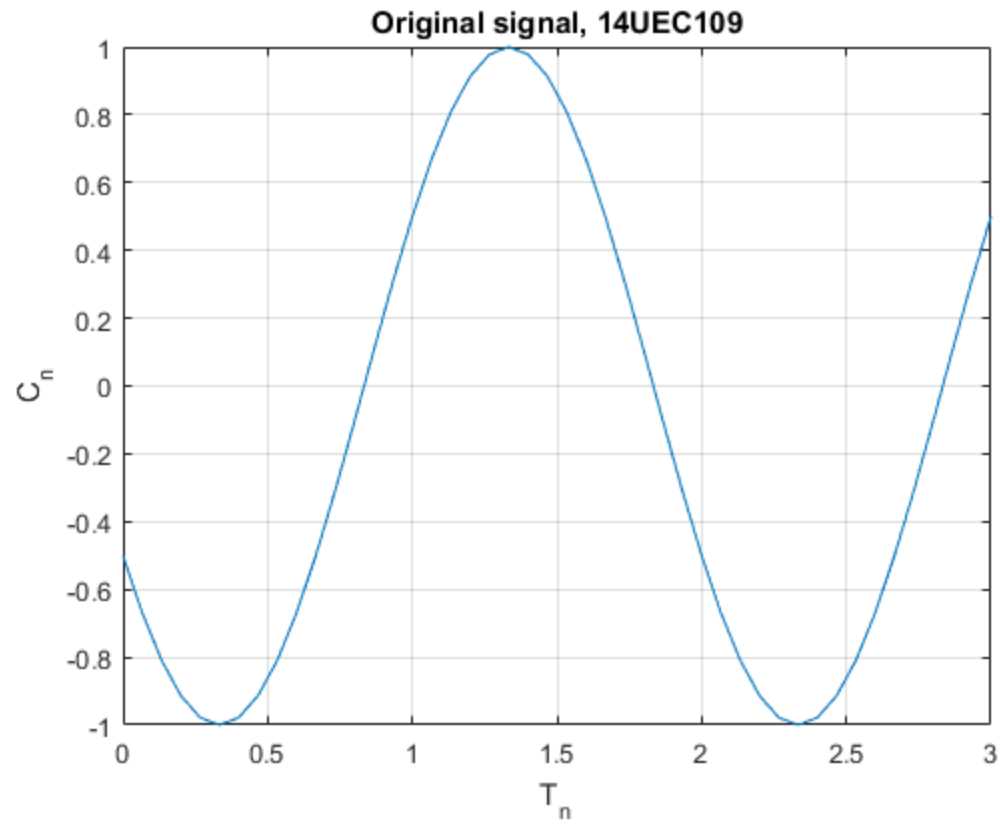
Original signal, 14UEC109

Magnitude plot of spectrum on log scale, 14UEC109

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