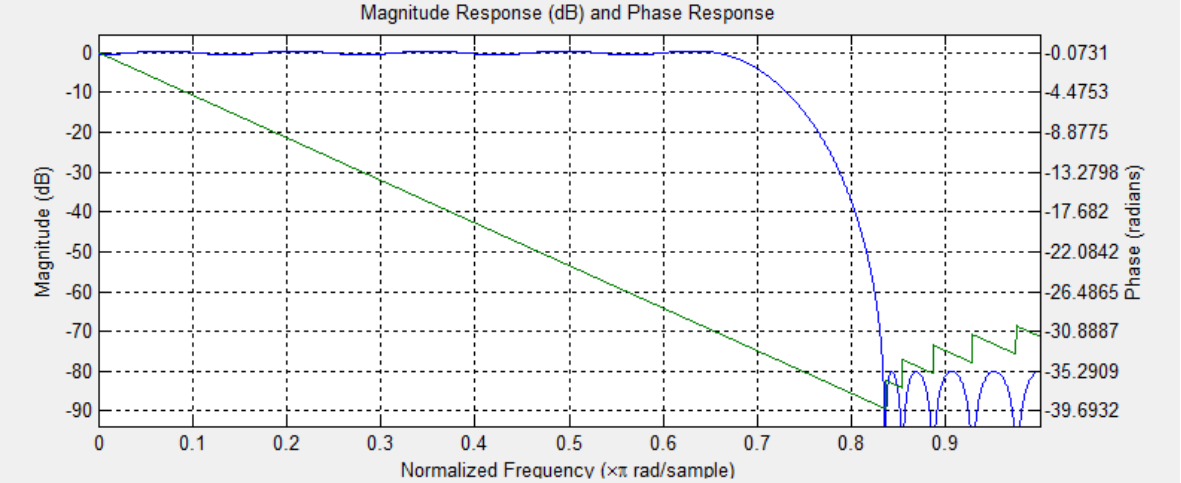
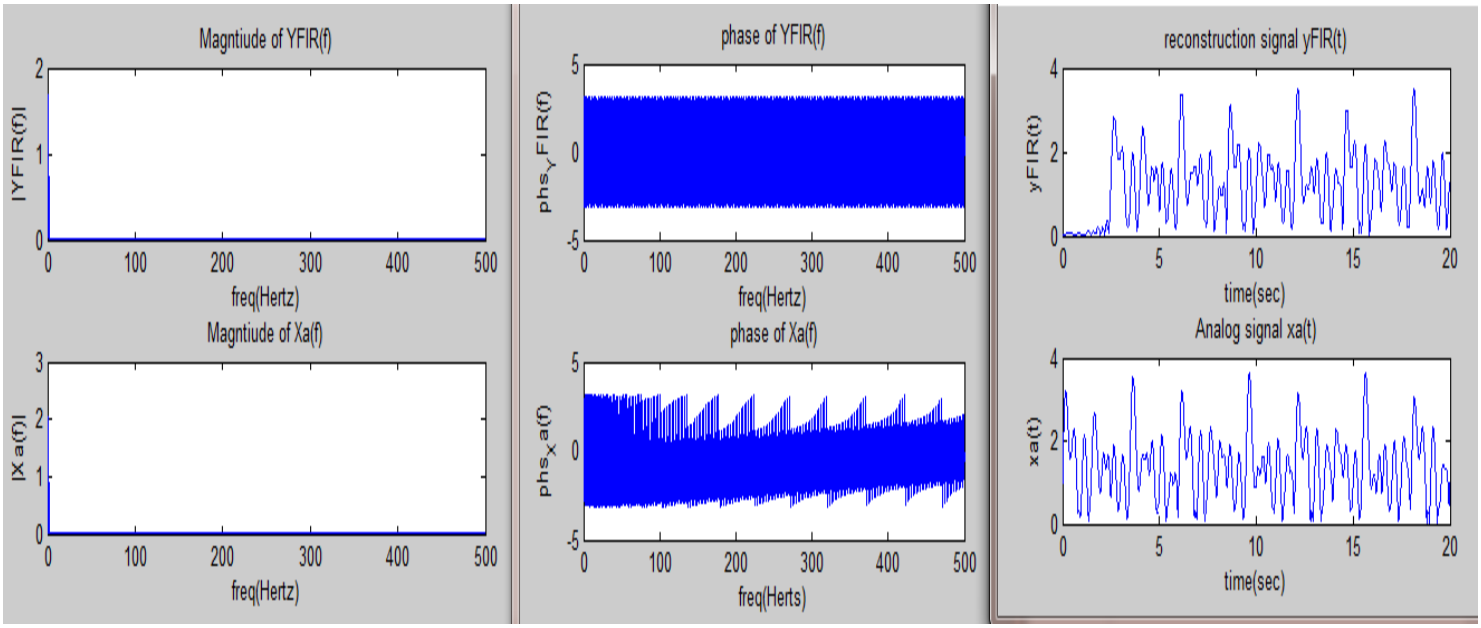
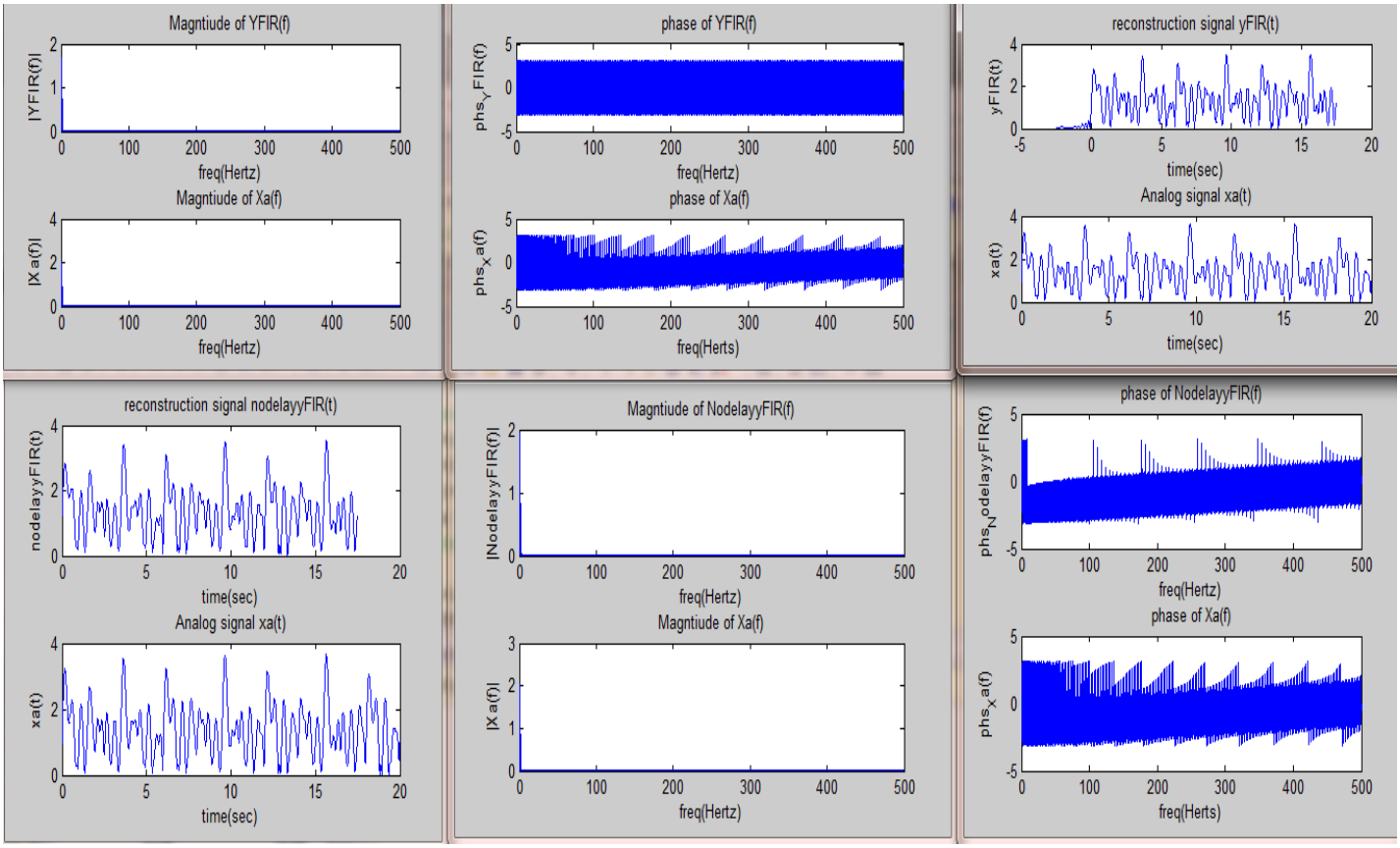
Q1)


Magnitude Response (dB) and Phase Response
Magnitude (dB)
Phase (radians)
Normalized Frequency (×π rad/sample)
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-0.0731
-4.4753
-8.8775
-13.2798
-17.682
-22.0842
-26.4865
-30.8887
-35.2909
-39.6932
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

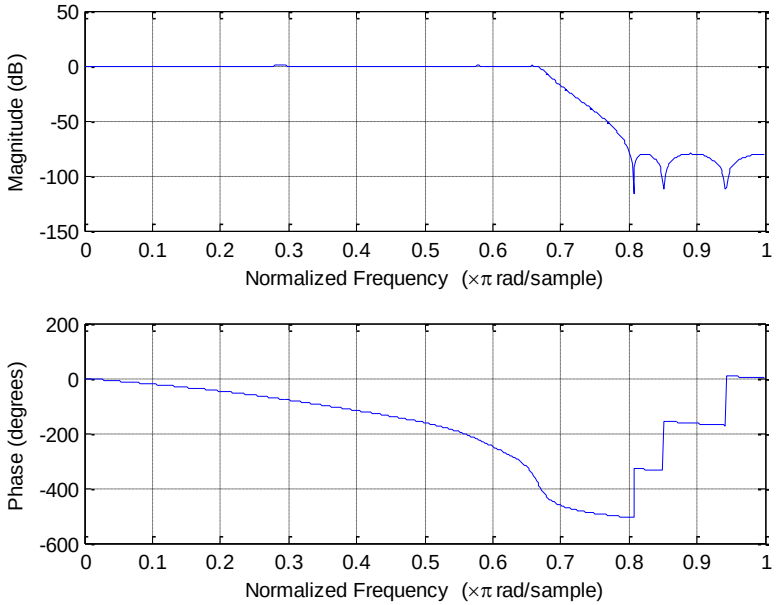
Q2)


Magntiude of YFIR(f)
|YFIR(f)|
freq(Hertz)
Magntiude of Xa(f)
|X a(f)|
freq(Hertz)
phase of YFIR(f)
phs_YFIR(f)
freq(Hertz)
phase of Xa(f)
phs_Xa(f)
freq(Herts)
reconstruction signal yFIR(t)
yFIR(t)
time(sec)
Analog signal xa(t)
xa(t)
time(sec)

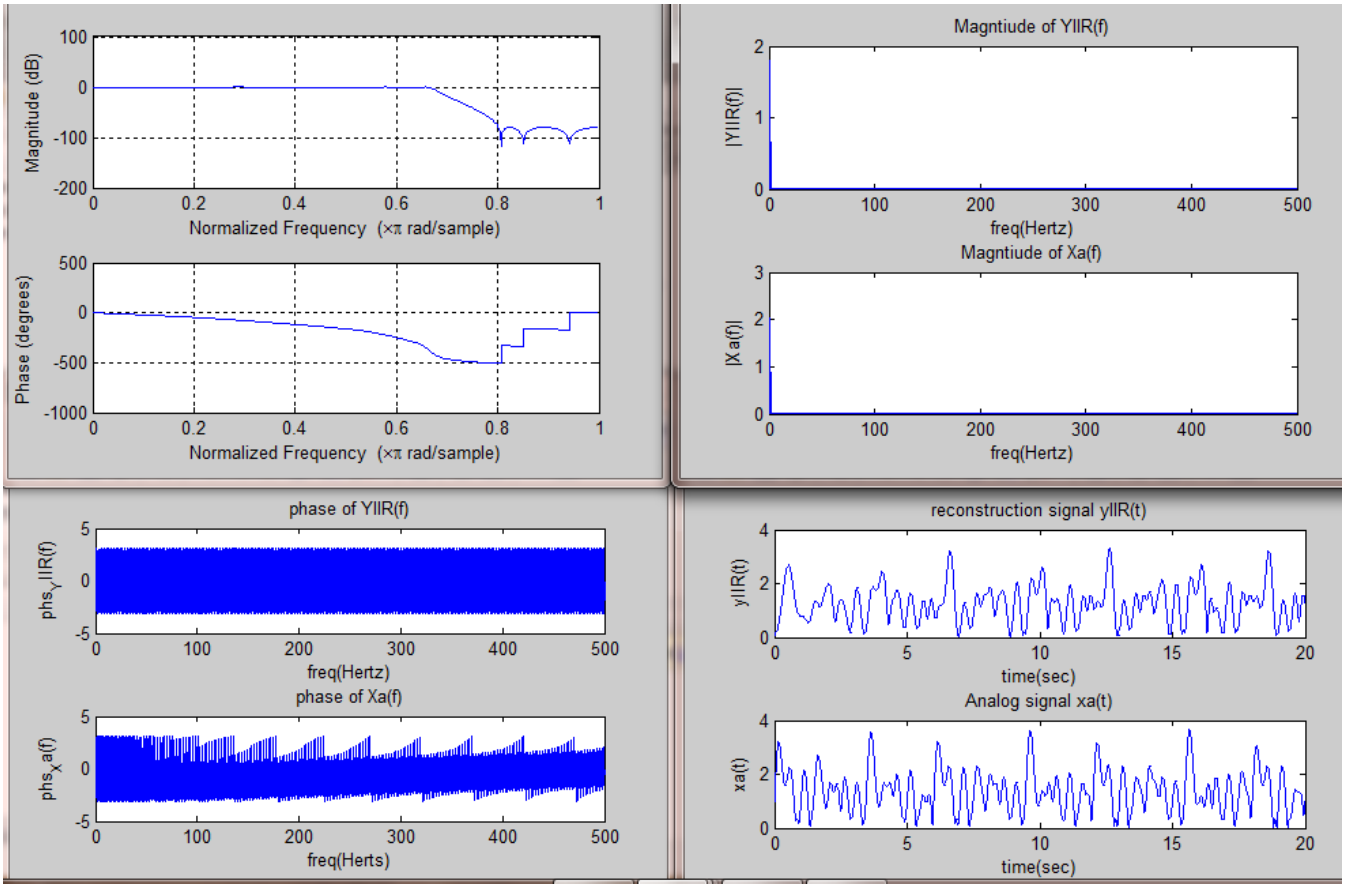
Q3)


Magntiude of YFIR(f)
|YFIR(f)|
freq(Hertz)
Magntiude of Xa(f)
|X a(f)|
freq(Hertz)
phase of YFIR(f)
phsY FIR(f)
freq(Hertz)
phase of Xa(f)
phsX a(f)
freq(Herts)
reconstruction signal yFIR(t)
yFIR(t)
time(sec)
Analog signal xa(t)
xa(t)
time(sec)
reconstruction signal nodelayyFIR(t)
nodelayyFIR(t)
time(sec)
Analog signal xa(t)
xa(t)
time(sec)
Magntiude of NodelayyFIR(f)
|NodelayyFIR(f)|
freq(Hertz)
Magntiude of Xa(f)
|X a(f)|
freq(Hertz)
phase of NodelayyFIR(f)
phsNodelayyFIR(f)
freq(Hertz)
phase of Xa(f)
phsX a(f)
freq(Herts)

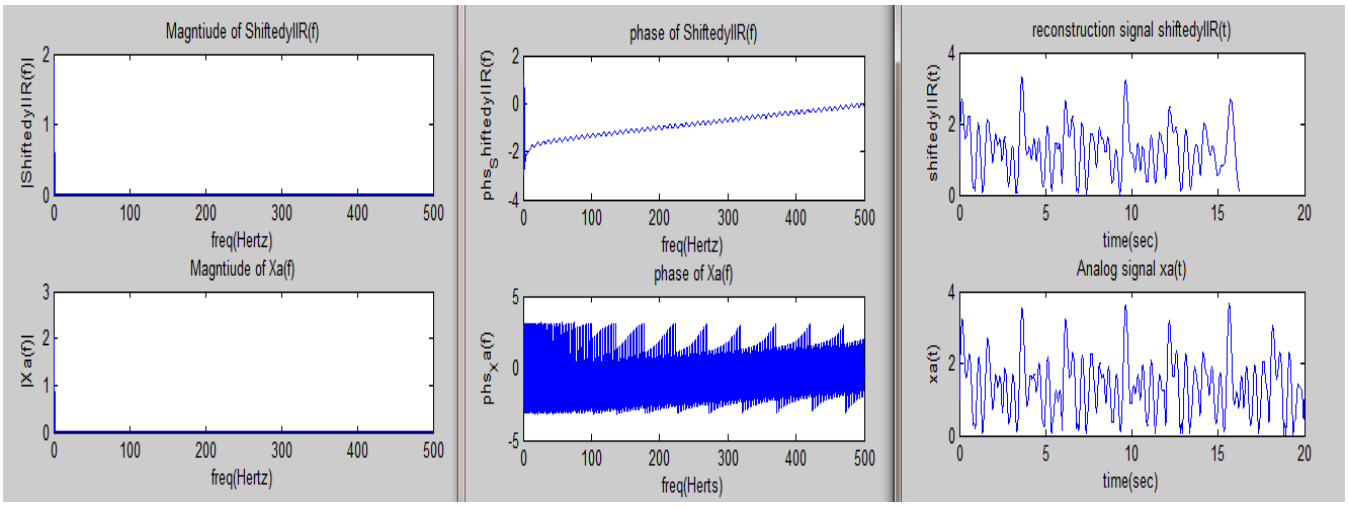
Q4)


Magnitude (dB)
Normalized Frequency (×π rad/sample)
Phase (degrees)
Normalized Frequency (×π rad/sample)

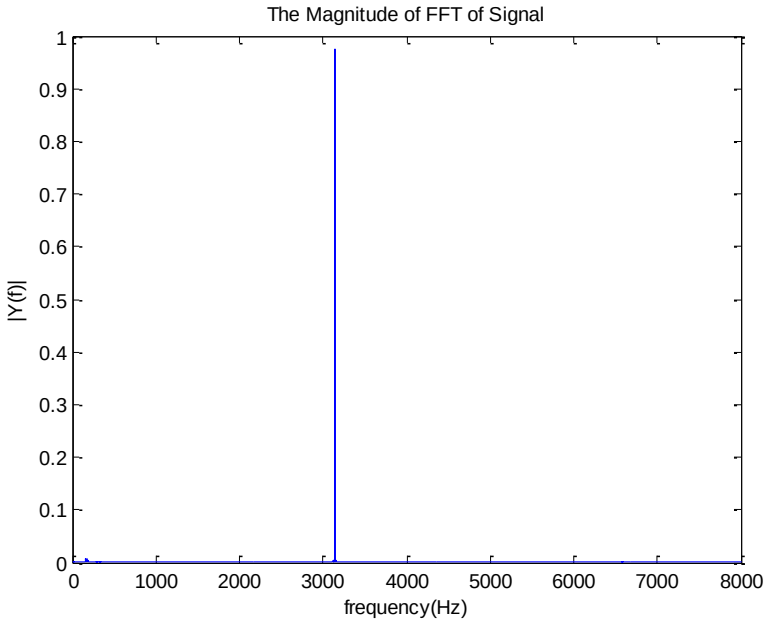
Q5)


Magnitude (dB)
Normalized Frequency (×π rad/sample)
Phase (degrees)
Normalized Frequency (×π rad/sample)
Magntiude of YIIR(f)
|YIIR(f)|
freq(Hertz)
Magntiude of Xa(f)
|Xa(f)|
freq(Hertz)
phase of YIIR(f)
freq(Hertz)
phase of Xa(f)
freq(Herts)
reconstruction signal yIIR(t)
yIIR(t)
time(sec)
Analog signal xa(t)
xa(t)
time(sec)

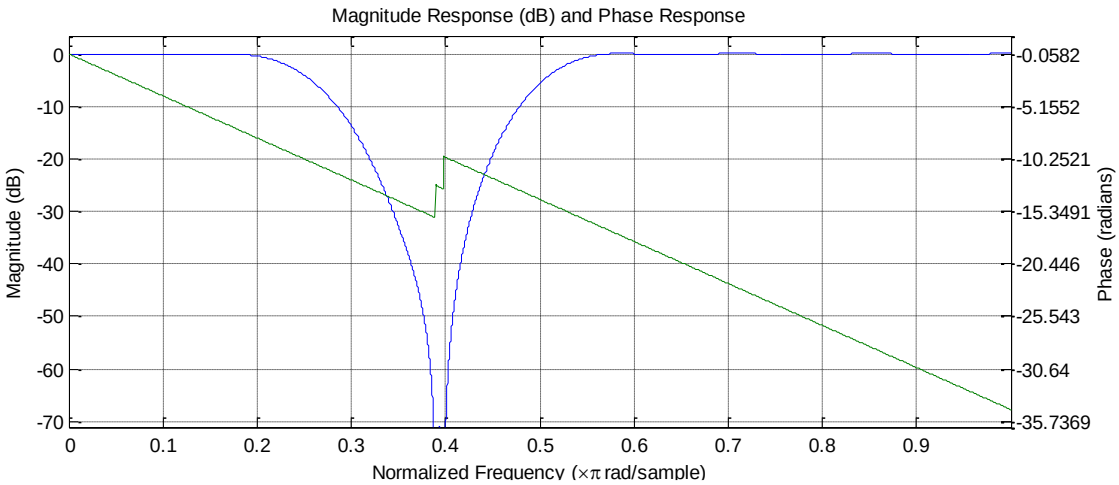
Q6)


Magntiude of ShiftedyIIR(f)
freq(Hertz)
Magntiude of Xa(f)
freq(Hertz)
phase of ShiftedyIIR(f)
freq(Hertz)
phase of Xa(f)
freq(Herts)
reconstruction signal shiftedyIIR(t)
time(sec)
Analog signal xa(t)
time(sec)

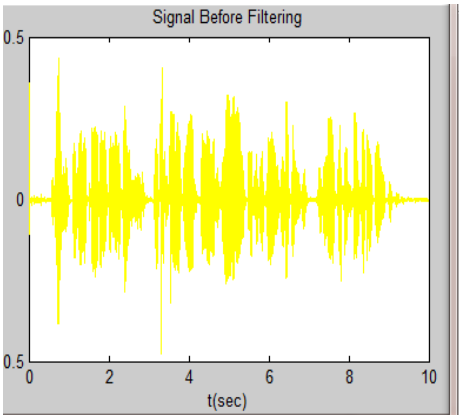
Q9)

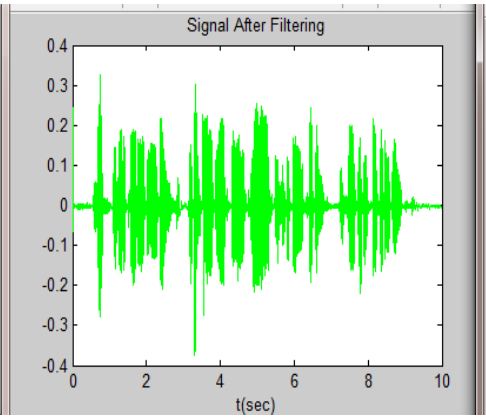


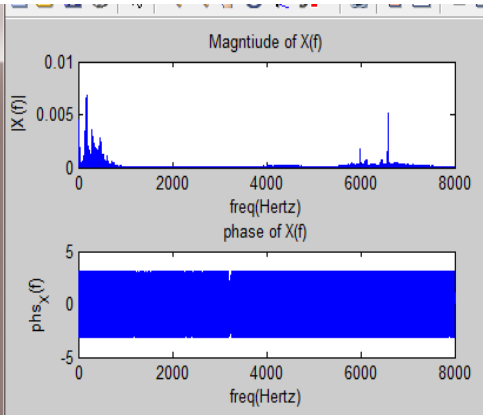
Q10)

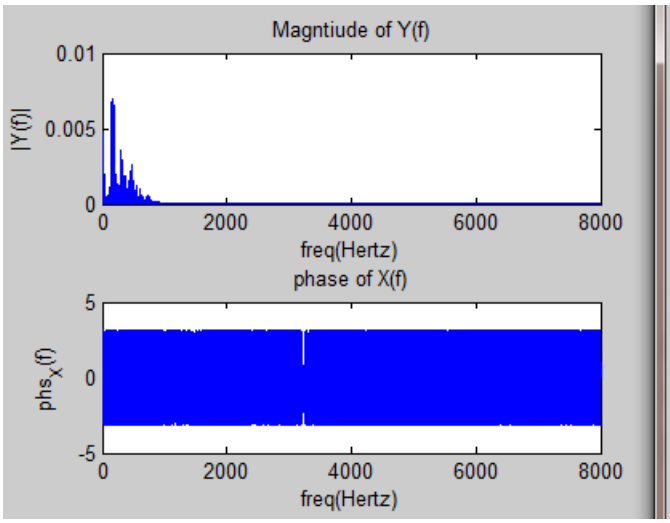


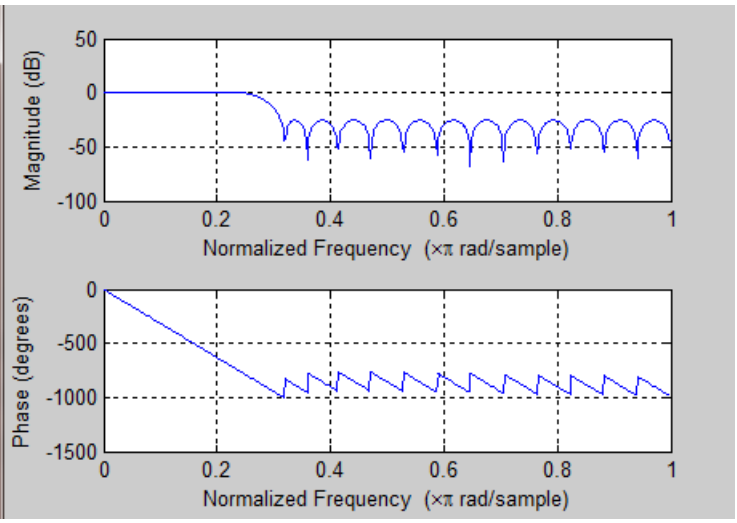
Q12) Audio file obtained from noisysound file, is saved as an audio file named “noiseless”.


Signal Before Filtering
0.5
0
0.5
0
2
4
6
8
10
t(sec)


Signal After Filtering
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
0
2
4
6
8
10
t(sec)


Magntiude of X(f)
|X(f)|
0.01
0.005
0
0
2000
4000
6000
8000
freq(Hertz)
phase of X(f)
phsX(f)
5
0
-5
0
2000
4000
6000
8000
freq(Hertz)


Magntiude of Y(f)
|Y(f)|
0.01
0.005
0
0
2000
4000
6000
8000
freq(Hertz)
phase of X(f)
phsX(f)
5
0
-5
0
2000
4000
6000
8000
freq(Hertz)


Magnitude (dB)
50
0
-50
-100
0
0.2
0.4
0.6
0.8
1
Normalized Frequency (×π rad/sample)
Phase (degrees)
0
-500
-1000
-1500
0
0.2
0.4
0.6
0.8
1
Normalized Frequency (×π rad/sample)