Lab Report-4
Name: Md. Abdul Muneem Adnan
ID: 20-44213-3

a)

```
%Id:20-44213-3
%A=2,B=0,C=4,D=4,E=2,F=1,G=3,H=3
%A1=GD=34, A2=AF=21
A1=34;
A2=21;
CDE=442;
fs=40000;
t=0:5/fs:5-5/fs;
x1=A1*cos(2*pi*(442*100)*t);
n=4;
L=(2^n)-1
```

Command Window

```
>> DataCom_Lab_3

L =

    15
```

b)

```
A1=34;
A2=21;
CDE=442;
fs=40000;
t=0:5/fs:5-5/fs;
x1=A1*cos(2*pi*(CDE*100)*t);
n=4;
L=(2^n)-1;
delta= (max(x1)-min(x1))/L
```

Command Window

```
>> DataCom_Lab_3

delta =

    4.5333
```

c)

```
A1=34;
```

```
A2=21;
CDE=442;
fs=40000;
t=0:5/fs:5-5/fs;
x1=A1*cos(2*pi*(CDE*100)*t);
x=3.2;
n=4;
L=(2^n)-1;
delta= (max(x1)-min(x1))/L;
xq=min(x1)+(round((x-min(x1))/delta)).*delta
```

Command Window

```
>> DataCom_Lab_3

xq =

    2.2667
```

d)

```
A1=34;
A2=21;
CDE=442;
fs=80000;
t=0:1/fs:0.005;
x1=A1*cos(2*pi*(CDE*100)*t);
x=3.2;
n=4;
L=(2^n)-1;
delta= (max(x1)-min(x1))/L;
xq=min(x1)+(round((x1-min(x1))/delta)).*delta;
B = dec2bin((round((x1-min(x1))/delta)))
fid = fopen('binary.txt' , 'w')
fprintf(fid, [repmat('%c',1,size(B,2)) '\r\n'], B.')
fclose(fid)
```

```
Command Window
1000
1001
0011
1101
0000
1111


fid =

     3


ans =

        2406


ans =

     0

fx >>
```

d)

```
A1=34;
A2=21;
CDE=442;
fs=40000;
t=0:1/fs:0.001;
x1=A1*cos(2*pi*(CDE*100)*t);
x=3.2;
n=4;
L=(2^n)-1;
delta= (max(x1)-min(x1))/L;
xq=min(x1)+(round((x1-min(x1))/delta)).*delta;
subplot(3,1,1)
plot(t,x1,'r');
subplot(3,1,2);% breaking the window figure to plot both graphs
stem(t,x1,'k');% plot of discrete time signaltitle('Discrete time
representation')% title of the figure
xlabel('time(s)')% label on the x-axis of the plot
ylabel('X[n]')% label on the y-axis of the plot
subplot(3,1,3);
stairs(t,xq,'b');% the quantized output
title('Quantized Signal')% title of the figure
xlabel('time')% label on the x-axis of the plot
ylabel('amplitude')% label on the y-axis of the plot
```

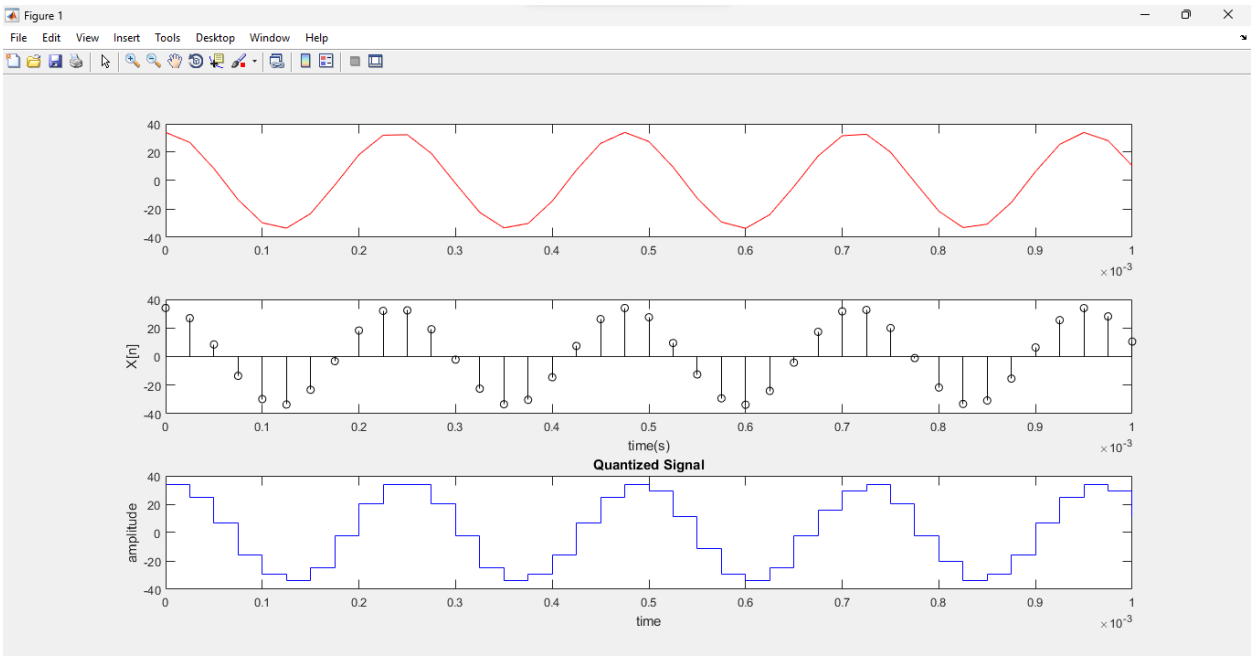
Figure 1
File Edit View Insert Tools Desktop Window Help
X[n]
time(s)
Quantized Signal
amplitude
time
×10^-3