MARKS:

AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)

Data Communication Laboratory

Experiment No: 3

Section: G

Semester: Spring 20-21

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Submitted by: ISLAM,MD.NAYMUL

Date of Performance: 9-Feb-21

Date of Submission: 16-Feb-21

Working Procedure:

My id= 19-40125-1

So,A=1, B=9, C=4, D=0, E=1, F=2, G=5, H=1

Given, $x_1(t) = A_1 \cos(2\pi(CDE*100)t)$

So, $x_1(t) = A_1 \cos(2\pi(401*100)t)$

Ans. (A)

A1= GD= 54

A2= AF= 12

Ans. (B)

i. Ans:

Xmin=0

Xmax=5

m=4

So, L= 2^4= 16

ii. Ans:

$\Delta = (Xmax-Xmin)/L$

$= (5-0)/16$

$= 0.3125$

iii. Ans:

The quantization level = 3.2 /0.3125
= 10.24
=10

iv. Ans:

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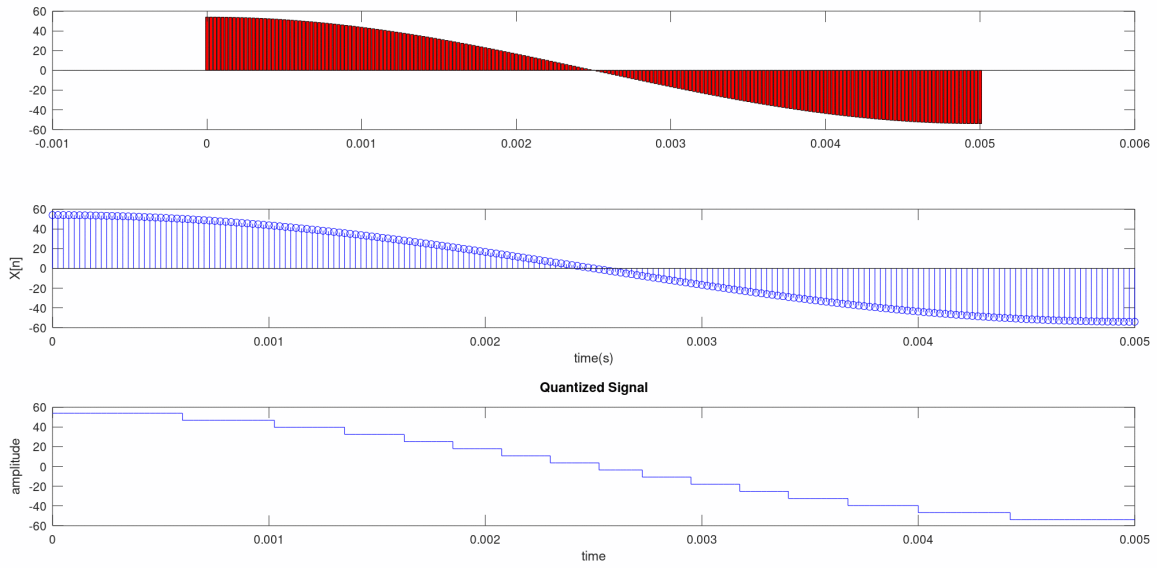
v. Ans:

```
A1=54;
A2=12;
CDE=401;
fs= 40e3;
t= 0:1/fs:0.005;
x= A1*cos(2*pi*(CDE*100)*t);
m=4;
L=(2^m)-1;
delta= (max(x)-min(x))/L;
xq= min(x)+(round((x-min(x))/delta)).*delta
subplot(3,1,1)
bar(t,x,'r');
subplot(3,1,2);
stem(t,x,'b');
xlabel('time(s)')
ylabel('X[n]')
subplot(3,1,3);
stairs(t,xq,'b');
title('Quantized Signal');
xlabel('time');
ylabel('amplitude');
codes = dec2bin ((round((x-min(x))/delta)),n)
```

- **Source Code:**

```
A1=54;
A2=12;
CDE=401;
fs= 40e3;
t= 0:1/fs:0.005;
x= A1*cos(2*pi*(CDE*100)*t);
m=4;
L=(2^m)-1;
delta= (max(x)-min(x))/L;
xq= min(x)+(round((x-min(x))/delta)).*delta
subplot(3,1,1)
bar(t,x,'r');
subplot(3,1,2);
stem(t,x,'b');
xlabel('time(s)')
ylabel('X[n]')
subplot(3,1,3);
stairs(t,xq,'b');
title('Quantized Signal');
xlabel('time');
ylabel('amplitude');
codes = dec2bin ((round((x-min(x))/delta)),m)
```

- **Result:**



From Lab – 02

➢ Working Procedure:

Ans. (d):

```
pkg load communications
fs = 2000;
dt = 1/fs;
stopTime = 2;
A1=50;
A2=12;
C=4;
F=1;
t = (-2:dt:stopTime);
x1 = A1*cos(2 * pi * C * 100 *t );
x2 = A2*cos(2 * pi * F * 100 *t );
x3 = x1 + x2;
L=6;
delta=(max(x3)-min(x3))/L;
xq=min(x3)+(round((x3-min(x3))/delta)).*delta;
subplot(3,1,1);
bar(t,x3,'r');
subplot(3,1,2);
stem(t,x3,'b');
xlabel('time(s)')
ylabel('X[n]');
subplot(3,1,3);
stairs(t,xq,'b');
title('Quantized Signal');
xlabel('time');
ylabel('amplitude');
```

➢ Code:

```
pkg load communications
fs = 2000;
dt = 1/fs;
stopTime = 2;
A1=50;
A2=12;
```

```
C=4;
F=1;
t = (-2:dt:stopTime);
x1 = A1*cos(2 * pi * C * 100 *t );
x2 = A2*cos(2 * pi * F * 100 *t );
x3 = x1 + x2;
L=6;
delta=(max(x3)-min(x3))/L;
xq=min(x3)+(round((x3-min(x3))/delta)).*delta;
subplot(3,1,1);
bar(t,x3,'r');
subplot(3,1,2);
stem(t,x3,'b');
xlabel('time(s)')
ylabel('X[n]');
subplot(3,1,3);
stairs(t,xq,'b');
title('Quantized Signal');
xlabel('time');
ylabel('amplitude');
```

➢ Result: