UNITED INTERNATIONAL UNIVERSITY

Lab Report-(03)

Course Title – Digital Signal Processing Laboratory

Course Code- EEE 3301

Submitted To

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Objectives:

The purpose of this lab session was to understand the use of sampling and reconstruction to form analog signal into digital and vice versa. Also, to learn to use them in a practical scenario using MATLAB. After that, to understand the use quantization and its implements using MATLAB.

Literature Survey:

The was started with a example of sampling continuous time signal by writing code in MATLAB.
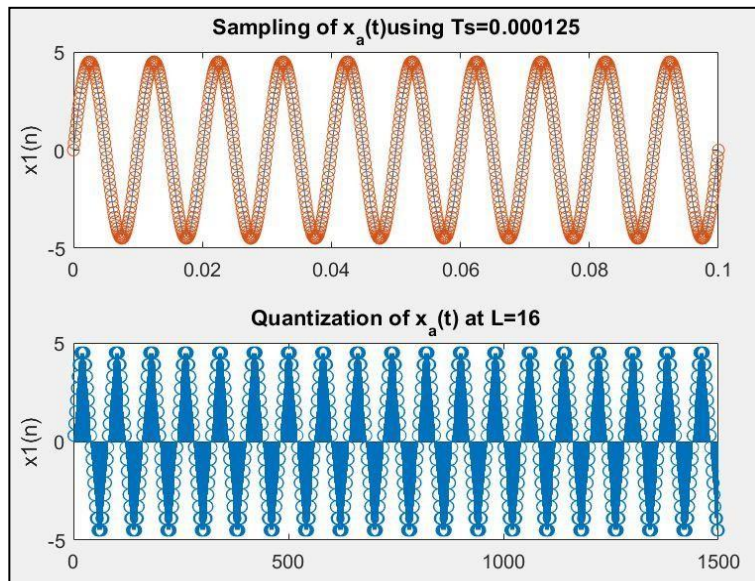Home Works

HW 1

Code:

```
t=0:0.001:1;
xa=4.5*sin(200*pi*t);Ts=0.000125;
N1=round(1/Ts);n1=0:N1;
x1=4.5*sin(200*pi*n1*Ts);subplot(2,1,1);
plot(t,xa,n1*Ts,x1,'o');axis([0,0.1,-5,5]);
ylabel('x1(n)'); title('Sampling of x_{a}(t)using Ts=0.000125');

z=length(x1); y1=uquant(x1,16);n=1:z; subplot(2,1,2);
stem(n,y1); axis([0,1500,-5,5]);
ylabel('x1(n)'); title('Quantization of x_{a}(t) at L=16');
```

Figure:

HW 2

Code:
```
t=0:0.001:1;
xa=sin(1000*pi*t);Ts1=0.0001;
N1=round(1/Ts1);n1=0:N1;
x1=sin(1000*pi*n1*Ts1);subplot(3,1,1);
plot(t,xa,n1*Ts1,x1,'o');axis([0,0.01,-1.1,1.1]); ylabel('x1(n)'); title('Sampling of x_{a}(t)using
Ts=0.0001');

Ts2=0.001;
N2=round(1/Ts2);n2=0:N2;
x2=sin(1000*pi*n2*Ts2);subplot(3,1,2);
plot(t,xa,n2*Ts2,x2,'o');axis([0,0.01,-1.1,1.1]);
ylabel('x2(n)'); title('Sampling of x_{a}(t)using Ts=0.01');

Ts3=0.00001;
N3=round(1/Ts3);n3=0:N3;
x3=sin(1000*pi*n3*Ts3);subplot(3,1,3);
plot(t,xa,n3*Ts3,x3,'o');axis([0,0.01,-1.1,1.1]); ylabel('x3(n)'); title('Sampling of x_{a}(t)using
Ts=0.00001');
```

Figure:
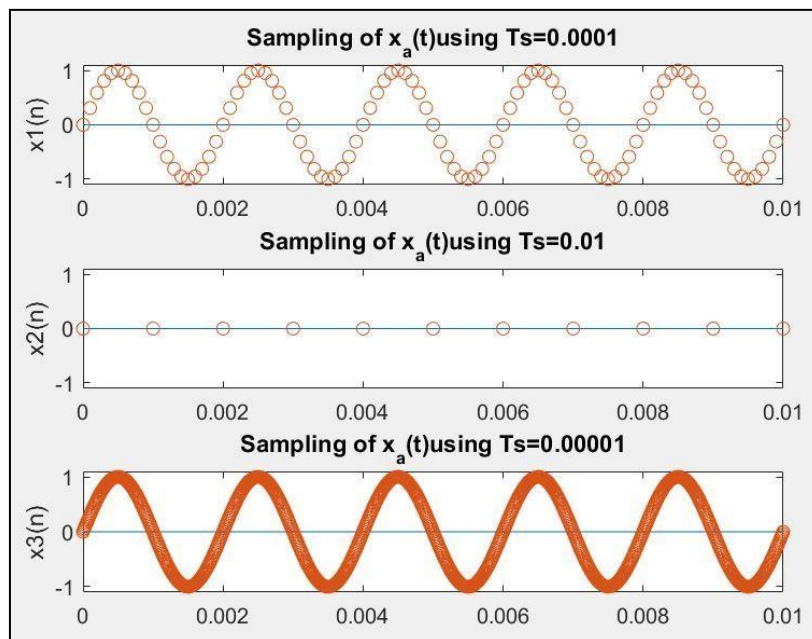
Conclusion:
At last, all the examples seem to cover the objectives of this session that was declared at the beginning of this report. The home tasks are made in a manner where all the concepts of this session have to be used to solve the questions correctly. Therefore, the objectives have been achieved.