```
clc;
 T=0.04; % Time period of 50 Hz signal
 t=0:0.0005:0.02;
 f = 1/T;
 n1=0:40;
 size(n1)

 xa_t=sin(2*pi*2*t/T);

 subplot(2,2,1);
 plot(200*t,xa_t);
 title('Verification of sampling theorem');
 title('Continuous signal');
 xlabel('t');
 ylabel('x(t)');

 ts1=0.002;%>niq rate
 ts2=0.01;%=niq rate
 ts3=0.1;%<niq rate

 n=0:20;
 x_ts1=2*sin(2*pi*n*ts1/T);
 subplot(2,2,2);
 stem(n,x_ts1);
 title('greater than Nq');
 xlabel('n');
 ylabel('x(n)');

 n=0:4;
 x_ts2=2*sin(2*pi*n*ts2/T);
 subplot(2,2,3);
 stem(n,x_ts2);
 title('Equal to Nq');
 xlabel('n');
 ylabel('x(n)');

 n=0:10;
 x_ts3=2*sin(2*pi*n*ts3/T);
 subplot(2,2,4);
 stem(n,x_ts3);
 title('less than Nq');
 xlabel('n');
 ylabel('x(n)');
```