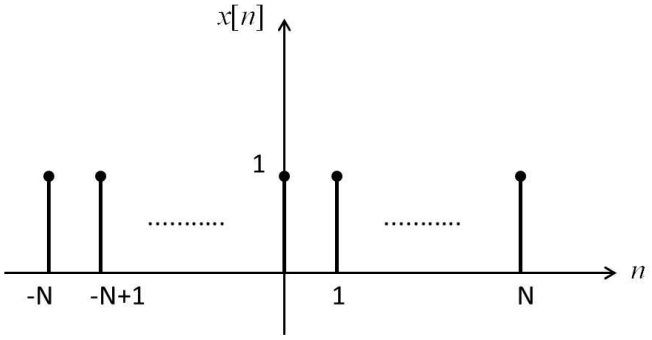
# EE 204 Signals and Systems Laboratory 10

## I. EXPERIMENTAL WORK

**Question1**




Fourier transform of $x$**[n]** is:

$$x[\omega] = \sum_{n=-\infty}^{\infty} x[\mathbf{n}]\, e^{-j\omega n}$$

Compute $x[\omega]$ for different values of N:

a) N=2
b) N=20
c) N=50
d) N=5

Plot the magnitude and the phase for different N values.

**Question2**

a) $x(t) = \cos(2t)$

Fourier transform of $x(t)$ is:

$$x(\omega) = \int_{-\infty}^{\infty} x(t)\, e^{-j\omega t}\, dt$$

Compute $x(\omega)$ by writing a Matlab program, plot the magnitude and the phase of $x(\omega)$.

b) Repeat part a) for $x(t) = \sin(2t)$

**Question3**

f(t)=imp(t-1) and g(t)=imp(t-2)

a) What are the fourier transform of f(t) and g(t)

b)If h(t) = f(t)*g(t), then what is the Fourier Transform of h(t)?

c)Is the rule h(w)=sqrt(2pi).f(w).g(w)satisfied ?