**POC Lab-6 Assignment**

**Part A:**

To run the program type the following command in the command window:

*[ rno, b,c,d,e,count,temp ] = noise( );*

Explanation of the output:

rno: contains 50000 random numbers upto 100000

b: contains 17 bit representation of the random numbers

c: contains bits as vectors of length 4

d: contains bits after they have been passed through AWGN channel

e: contains bits as decoded by the receiver

temp: gives the bit error rate

**Part B:**

To run the program type the following command in the command window:

[out,ff,w,y,yt,op,count,ber ] = ptrain( c )

Explanation of the output:

c: Input to the function that contains the bit stream of the data.

out: the value of the pulse train at different time instants

ff: Fourier transform of the pulse train

w: angular frequency matrix

y: bitstream of the data after passing through a channel of Bandwidth=25 Hz

yt: representation of y in time domain

op: output of the receiver with input as yt

count: no of bits in error at the receiver

ber: the bit error rate

Bit Rate: 100 bps

Channel Bandwidth: 25 Hz

**Graphs:**

***Figure 1:***  shows the plot of the pulse train using on-off signalling scheme

***Figure 2:***  shows the spectrum of the pulse train. Bandwidth of the pulse train= 50 Hz

***Figure 3:*** shows the spectrum of the pulse train after it has been passed through a channel of bandwidth 25 Hz.

**Figure 4:** shows the time domain representation of the pulse train after passing through a low pass filter

**The graphs contain a large no of data points spaced very close to each other. To view the outputs in a better way please zoom along the axes.**