**Lab2 OFDM: Performance Evaluation**

**Exercise 1: OFDM System in AWGN Channel**

**Implement an OFDM system with N = 64 sub-carriers and bandwidth W = 39(last two student number) / 50 in MHz. Use 4-QAM as the modulation scheme. Perform the OFDM demodulation in an AWGN channel for SNRs ranging from 0 dB to 20 dB using Monte Carlo simulation runs and plot the resulting BER.**

**1. What is the sub-carrier spacing, duration of transmitted OFDM symbol and**

**duration of CP in seconds?**

Sub-carrier Spacing = bandwidth / sub carrier number = 12.19 kHz

Duration of transmitted OFDM Symbol =sub carrier number / bandwidth= 82.05 us

Duration of Cp = Ncp / Bandwidth = 8.11 us

**2. Compare the results with a 4-QAM BER in AWGN channel and comment on**

**your observations.**

**3. Change the CP length and comment on its effect in AWGN channel.**