

Principles of Communications Networks

Homework Assignment 2

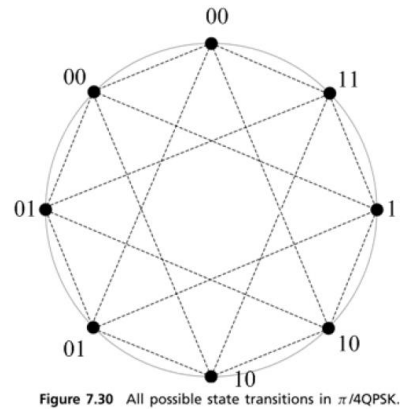
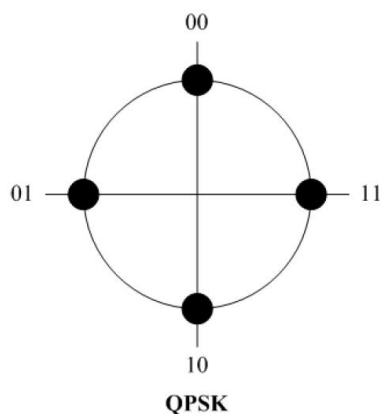
Due date: 2020/5/4 (Monday) 6pm

Note: 請用 A4 空白影印紙作答，並繳交至助教實驗室(工程三館 446B)

Note: please using A4 copy paper as your answer sheet, and turn in your answer sheet to TAs (EC Building 446B)

For exchange students, please scan your answer sheet and email to TAs.

1. The constellations of QPSK and $\pi/4$ QPSK are shown below. Assume that we are going to transmit a binary string: 10011100. Let θ_0 of $\pi/4$ QPSK be $3\pi/4$. Please list the phase changes of QPSK and $\pi/4$ QPSK, respectively.



2. When we say a channel is AWGN channel, what does this mean?
3. A PSK signal is applied to a correlator supplied with a phase reference that lies within ϕ radians of the exact carrier phase. Determine the effect of the phase error ϕ on the average probability of error of the system.
4. Given the input binary sequence 1100100010, sketch the waveforms of the in-phase and quadrature components of a modulated wave obtained by using the QPSK based on the signal set shown below.

