Question 1: Signal propagation

a) What is path loss model for signal propagation?
b) Why the log-normal shadowing model is more realistic compared to the pass loss model?
c) What determines if a signal can be correctly decoded?
d) Why the log-normal shadowing model is still not realistic enough?

Question 2:

Define what spread spectrum technique is. What are the main benefits of a spread spectrum system? How can spreading be achieved?

Question 3:

How does the spreading factor affect the bandwidth of the spread signal? Consider a Direct Sequence Spread Spectrum system that uses XOR, with the chipping sequence of 0110101, draw the spread spectrum signal that belongs to the data sequence 0110.

Question 4:

Paper reading: “The Design Philosophy of the DARPA Internet Protocols” [1].

a) What was the top level goal for the DARPA Internet Architecture? Please describe the fundamental structure of the Internet this goal leads to.

b) “Internet communication must continue despite loss of networks or gateways” is also a very important goal and this goal leads to the reliability fate-sharing approach. What alternative design could there be? what are the advantages of fate-sharing?
Why the use of datagrams is an important architectural feature of the Internet? What is its drawback? What alternative building block could there be.

Question 5:


a) Please summarize the end-to-end argument;
b) Please list some commonly used examples where the argument can be applied;
c) Please list three examples where the end-to-end argument is diluted.

Hand In Instructions

This is a paper exercise. Please hand it in during the exercise session on the due date.

References
