

CSCD433/533 Advanced Networking

Assignment 2

Winter 2017

Due: Friday Jan 27th

Answer the following questions, keep your answers fairly short.
Print the answers on real paper. Turn in during class.

Questions

1. Compare the various digital to digital line encoding techniques, such as NRZ, AMI, Manchester and 4B5B. What are some of the advantages and disadvantages of each method. Suggestion, it would be really easy to make a table and show the advantages and disadvantages of these methods.
2. How are binary values represented in AMP shift keying and can you name a limitation with this approach? Provide a short example that shows how this works.
3. What are some major limitations of twisted pair media?
4. An image is 1024 x 768 pixels with 3 bytes/pixel. Assume the image is uncompressed.
 - a. How long does it take to transmit it over a 56-kbps modem channel?
 - b. Over a 1-Mbps cable modem?
 - c. Over a 10-Mbps Ethernet?
5. Is the Nyquist theorem true for high quality single mode fiber or just copper wire. Explain your answer.
6. A factor in the delay of a store -and-forward packet-switching system is how long it takes to store and forward a packet through a switch. If switching time is 10 microseconds, is this likely to be a major factor in the response of a client -server system where the client is in New York and the server is in California? Assume the propagation speed in copper and fiber to be 2/3 the speed of light in a vacuum (3×10^8 m/sec). Distance from NY to CA is 2968.2 miles.
7. If a binary signal is sent over a 3-kHZ channel whose SNR is 20 dB, what is the maximum achievable data rate?
8. TV channels are 6 MHz wide. How many bits/sec can be sent if four-level digital signals are used? Assume a noiseless channel.