

# CSCI 466 Homework 1

Due September 9th at 11:59 PM

Please submit your **typed** answers as a PDF to the correct D2L dropbox

**Problem 1.** Fill out the course questionnaire, which can be found on the course website

**Problem 2.** Join the class Discord. The link to join discord can be found on the course website. Be sure to get the csci-466 role and make sure I can identify you based on your nickname.

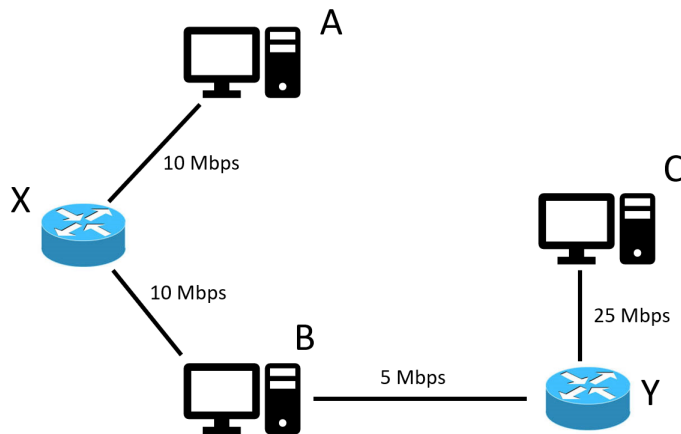
**Problem 3.** What is the network edge?

**Problem 4.** List the 7 layers of the OSI model and a significant responsibility for each layer

**Problem 5.** What is the difference between TCP and UDP? Describe a use case for each protocol and a justification for selecting the protocol.

**Problem 6.** What is the difference between packet switching and circuit switching?

**Problem 7.** Consider the diagram below and answer each question



- (a) What is the required time to transmit 100 Mb of data from A to B? Assume there is no delay
- (b) Consider the link at (A,X). Packets of length 6 Mb arrive to the switch at a rate of 4 packets per second. What is the traffic intensity? If there was a queue, would the queue at the switch begin to grow or shrink?
- (c) How much time is needed to transfer 50 Mb from endpoint C to endpoint B? Assume there is no delay
- (d) What is the throughput for endpoint C to endpoint B?

**Problem 8.** Suppose you successfully downloaded a funny cat picture that is located at [cs.montana.edu/pearsall/rainer.jpeg](http://cs.montana.edu/pearsall/rainer.jpeg). Describe the steps that occurred in the HTTP protocol. What port did it happen on? What response code did you receive? Ignore any steps that include cookies. (Note: You don't need to actually download such picture to figure out the answers to this question)