Assignment #1

No late assignments accepted!

ECE 487 (Data Communications Networks) **Section B1**   Dr. Hai Jiang

Electrical and Computer Engineering, University of Alberta   Winter 2020

Your Last name: _____Your First Name:_____ Your ID:_____

Due: 4:00PM, Friday, January 17, 2020, in the assignment box in the ETLC atrium

1. We need to connect 20 stations. How many links are needed in a mesh topology? How many links are needed in a star topology? How many drop lines are needed in a bus topology? How many links are needed in a ring topology (without counting the links that connect stations to repeaters)? Here a link means a connection between devices. (**4 points**)

2. Suppose you are watching a video posted on our university website. Is your video watching simplex, half-duplex, or full-duplex? Does your video watching use circuit switching or packet switching? (**2 points**)

3. Please explain why packet switching needs to "store and forward", and circuit switching does not need. (**4 points**)

4. A company has an internal network. In the internal network, there are 10 wireless routers. All the wireless routers are connected to a cable. Each device of the company gets access to its closest wireless router. What topologies are used in the internal network? Please explain your answer. (**2 points**)

5. Match the following to one or multiple layers of OSI model. In your answer, please give names of the layers. For example, for Layer 1, you should answer "physical layer." (**8 points**)
   a) Reliable process-to-process message delivery
   b) Route determination
   c) Error detection and retransmission
   d) Interface to transmission medium
   e) Format and code conversion services
   f) Provides access to the end user
   g) log-in and log-out procedure
   h) Responsibility for carrying frames between adjacent nodes