TTKK/Telecommunications Laboratory/JH

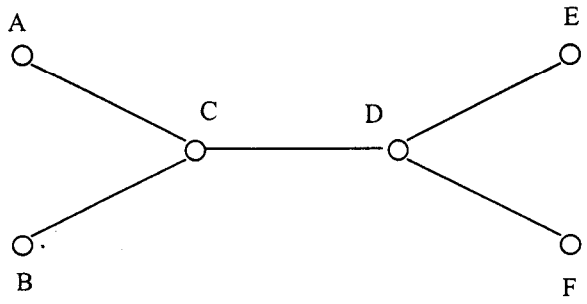
8305010 Communications Protocols
Exam 5.3.2001

1. Explain the concept of a protocol by comparing it to a language.

2. Data rate of a point-to-point transmission system is 64 kbit/s and propagation delay is 10 ms. Bit error rate is negligible. Define the frame length L in such a way that link utilisation is more than 70 % when stop-and-wait protocol is used.

3. Describe in detail the part of the TCP state machine dealing with the connection closing phase. Draw a figure and give sufficient explanations.

4. In the network below, the capacity of each link is 1 Mbit/s. Assume that A starts the transfer of a massive file (say, 500 MB) to F using FTP protocol. After some minutes B starts the transfer of a 800 kbit/s video stream (say, MPEG-2 coded movie) to E on top of UDP. How does the traffic distribution between the two applications on the link C -> D evolve in the near future? Give a detailed justification for your answer.



5. a) Give a brief overview of the FTP protocol.

   b) Draw a message sequence diagram of a typical FTP control connection.

   c) Which one opens and which one closes the data connection, the client or the server?