

EECS 563  
Homework #4

1. Which layer or layers perform flow control?
2. Which layer or layers perform error detection?
3. Security can be implemented at the at both the physical and transport layers. True or False
4. Consider the network design alternatives for communications within a geographic region.
  - a. Suppose all computers in a geographic region communicate using radio transmissions from a one antenna tower. Is the data link layer or network layer more appropriate for communications between computers in this region, justify your answer?
  - b. Now suppose the geographic region is covered by a large number of small (low power) transceivers/antennas covering smaller areas; each smaller region has a base station; the base stations are interconnected by a fiber mesh network. Which layer (data link layer or network layer) is more appropriate in this case, justify your answer?
5. What is IETF and what does it do?
6. What is an RFC? What does RFC 4838 describe?
7. What is encapsulation?
8. The DLC and transport layers can both include protocols to recover packets that are received with bit errors. True or False
9. Suppose an application layer entity wants to send an L-byte message to its peer process using an existing TCP connection. The TCP segment consists of the message plus 20 bytes of header. The segment is encapsulated into an IP packet that has an additional 20 bytes of header. The IP packet in turn goes inside an Ethernet frame that has 28 bytes of header and trailer. What percentage of the transmitted bits at the physical layer correspond to message information for:
  - a. L = 10 byte
  - b. L = 1500 byte
10. What design choices (service model, architecture and mechanisms) were made in the design of the Internet?