

Each problem counts 2 points.

1. Which layer of the OSI reference model are “ports” associated with?
 - a. Data Link
 - b. Network
 - c. **Transport**
 - d. Session
2. When someone refers to “L2”, which layer are they referring to?
 - a. **Data Link**
 - b. Network
 - c. Transport
 - d. Session
3. A 1000-bit signal is transmitted 10,000m over a 1Mbps link. The propagation delay is 333 microseconds. The link medium must be:
 - a. Copper
 - b. Fiber
 - c. **Free Space**
 - d. Something else
4. **T/F** It is possible to use FDM and NRZ encoding in the same signal at the same time.
5. A T1 link can carry about:
 - a. 0.5Mbps
 - b. 1.0Mbps
 - c. **1.5Mbps**
 - d. 2.0Mbps
6. **T/F** One of the reasons that CRC coding is widely used is that it can be used to detect burst errors.
7. In an Ethernet, it is always true that:
 - a. $2d > \text{slot time}$
 - b. $2d > \text{minimum frame length}$
 - c. $2d > \text{maximum length in meters}$
 - d. **none of the above**
8. After a virtual circuit has been established, the data items that are sent over it must carry a virtual circuit identifier (VCI) because:
 - a. Routers must determine the optimum route for each data item.
 - b. The VCI is used to re-route data in the event of a failure.
 - c. If data is erroneously routed away from the virtual circuit, the network can use the VCI to return the data to the correct path.
 - d. **A network link can carry multiple virtual circuits**
9. **T/F** In Distance Vector routing, each router floods its distance to all other routers.
10. The Leaky Bucket algorithm can be used to:
 - a. **Remove bursts from traffic patterns**
 - b. Provide congestion-control feedback from a receiver to a sender.
 - c. Prevent queue overflows

- d. None of the above
11. T/F When IP fragments a packet into smaller packets, the resulting packets may contain fewer than 20 header bytes.
12. A computer's IPv4 address is 20.1.3.7. The computer is in network number:
- a. 20
 - b. 20.1
 - c. 20.1.3
 - d. 20.1.1
13. A class B network uses subnetting with 6 bits allocated to the subnet identifier. The subnet mask is:
- a. 255.255.255.0
 - b. 255.252.0.0
 - c. 252.255.255.0
 - d. 255.255.252.0
14. ARP is:
- a. A method for mapping URLs to IP addresses
 - b. A method for routing in CIDR systems
 - c. A method for mapping IP addresses to MAC addresses
 - d. A method for assigning IP addresses
15. Assuming no optional fields are used, IPv6 packet headers are _____ as long as IPv4 packet headers:
- a. One-half
 - b. Exactly
 - c. Two times
 - d. Four times
16. Which of these applications would UDP be best suited for?
- a. Copying executable files between computers
 - b. IMplemenitng a highly reliable data link
 - c. Implementing Internet Telephony
 - d. UDP is not suitable for any of these applications