



School of Computer Science and Software Engineering

## CSE3020 Network Technology Semester 2, 2003

### Tutorial 8 - Week 9

**Question T8.1** - What does IEEE Project 802 have to do with the physical layer of the OSI model?

*The 802 model defines some of the physical specifications for each of the protocols defined in the MAC layer. It defines types of cable, connections and signals used for the specific type of LAN.*

**Question T8.2** - CSMA/CD:

- (a) What is meant by collision in LAN?
- (b) Briefly explain the operation of CSMA/CD protocol.
- (c) Why should there be fewer collisions on a Switched Ethernet network compared to a traditional Ethernet?

*From Stallings 6th Edition, page 472-474.*

**Question T8.3** - Is Ethernet MAC protocol suitable for carrying time-sensitive traffic such as voice traffic? Explain your answer.

*Ethernet MAC protocol is NOT suitable for carrying time-sensitive traffic such as voice traffic because the delay of a transmission is not bounded. Theoretically, with a positive (but very small) probability, the transmission delay a data frame may experience can be infinite.*

**Question T8.4** - Compare the data rates, access methods, and encoding schemes for traditional Ethernet, Fast Ethernet, and Gigabit Ethernet.

Network	Data Rate	Access Method	Encoding scheme
Ethernet	1, 10 Mbps	CSMA/CD	Manchester
Fast Ethernet	100 Mbps	CSMA/CD	Several (*)
Gigabit Ethernet	1 Gbps	CSMA/CD	Several (*)

Note: (\*) Not required to know the details.

**Question T8.5** - IEEE 802.5 Token Ring:

- (a) What functions are performed by a token ring repeater?  
*Data insertion, data reception, and data removal.*
- (b) How does a Token Ring LAN operate?

*From Stallings 6th Edition, page 482-483.*

**Question T8.6** - FDDI Token Ring:

- (a) What are the advantages of FDDI over a basic Token Ring?
- *The data rate on FDDI is about 100 Mbps whereas a Token Ring supports only 4 or 16 Mbps.*
  - *FDDI uses fiber optic cable, which is free of EMI, while Token Ring uses shielded twisted pair cable, which is more susceptible to noise.*
  - *The distance over which a FDDI network can cover is much greater than that of a Token Ring network.*
- (b) Compare and contrast the operation of a FDDI Token Ring and a basic Token Ring.  
*From Stallings 6th Edition, page 490-491.*

**Question T8.7** - Suppose there is heavy traffic on both a CSMA/CD LAN and a Token Ring LAN. A station on which system is more likely to wait longer to send a frame? Why?  
*The station on the CSMA/CD LAN probably waits longer before it can send collision-free data.*