

# CSE 556 Internetworking

## Fall Semester 2002

### Quiz No. 1

August 26, 2002

Name: **SOLUTION** Time Allowed: 20 Minutes

Total: 40 Points (8 Points each)

**Question 1:** Differentiate between the responsibilities of the datalink layer and the transport layer of the OSI Reference Model. Name one standards-based protocol at each layer.

**Transport Layer** - The Transport Layer forms the interface between the higher application-oriented layers and underlying network-dependent protocol layers. It provides the session layer with reliable message transfer facilities. Transport Layer Provides reliable, transparent transfer of data between end points; provides end-to-end (host-to-host) error recovery and flow control. Examples of standards-based transport layer protocols include TCP, UDP and AAL.

**Datalink Layer** - The primary purpose of the Data Link Layer is to provide error-free transmission of information between two end stations "edge nodes" attached to the same physical cable or media. This then allows the next higher layer to assume virtually error-free transmission over the physical link. The Data Link Layer is responsible for packaging and placing data on the network media. It then manages how the flow process of the bit stream takes place to include the following:

- Creates and recognizes frame boundaries
- Checks received messages for integrity
- Manages channel access and flow control
- Ensures correct sequence and transmitted data
- Detects and possibly corrects errors that occur in the Physical Layer without using the functions of the upper layers
- Provides flow-control techniques to ensure that link buffer capacity is not exceeded

**Question 2:** What is the difference between switched networks and broadcast networks? Why is the broadcast model of transmission suitable for a local area network.

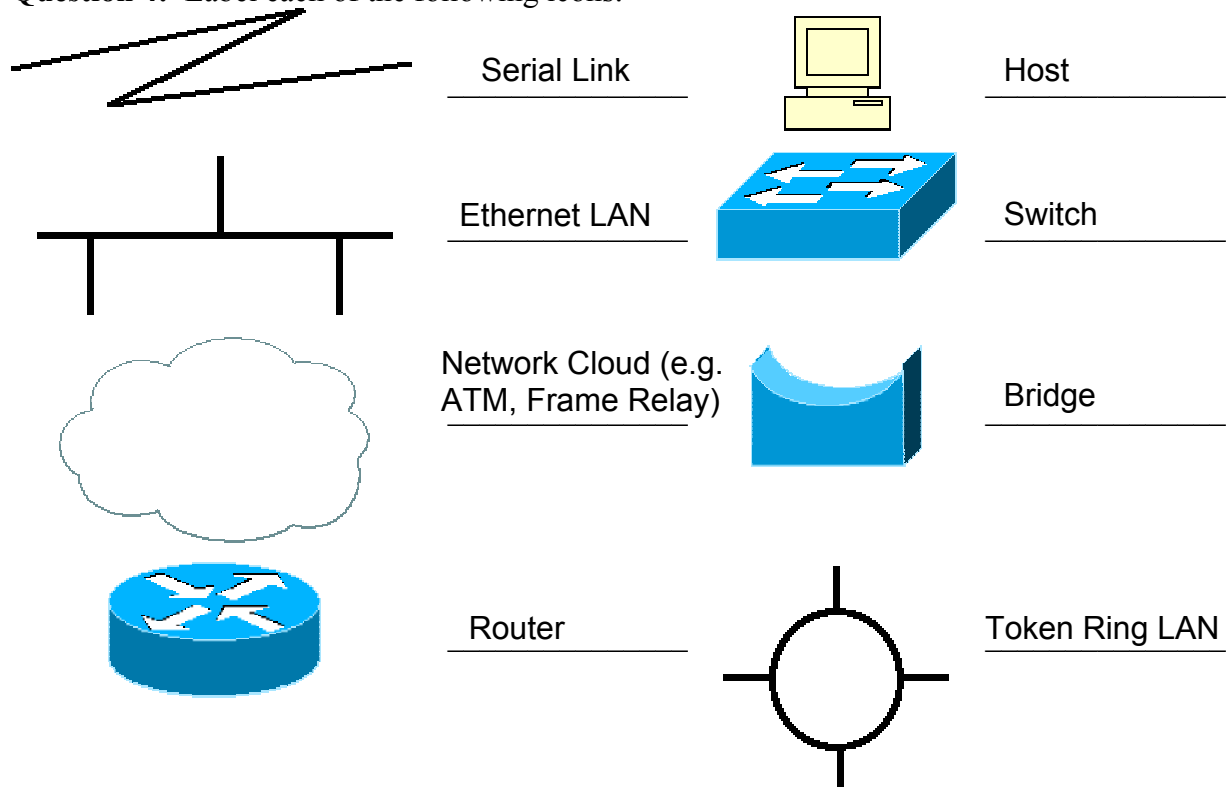
In switched networks the messages are transferred from the source station to the to the destination station by the action of intermediate nodes called the switching nodes whereas in broadcast networks the source station transmits the information and all other stations on the network listen to it. The intended destination is one of the other stations and so a station pays attention to the message if its address is in the destination address field.

The broadcast model suits local area networks well because in a local area network a relatively small number of stations are attached to a high speed shared medium. The broadcast model results in a simple medium access control mechanism.

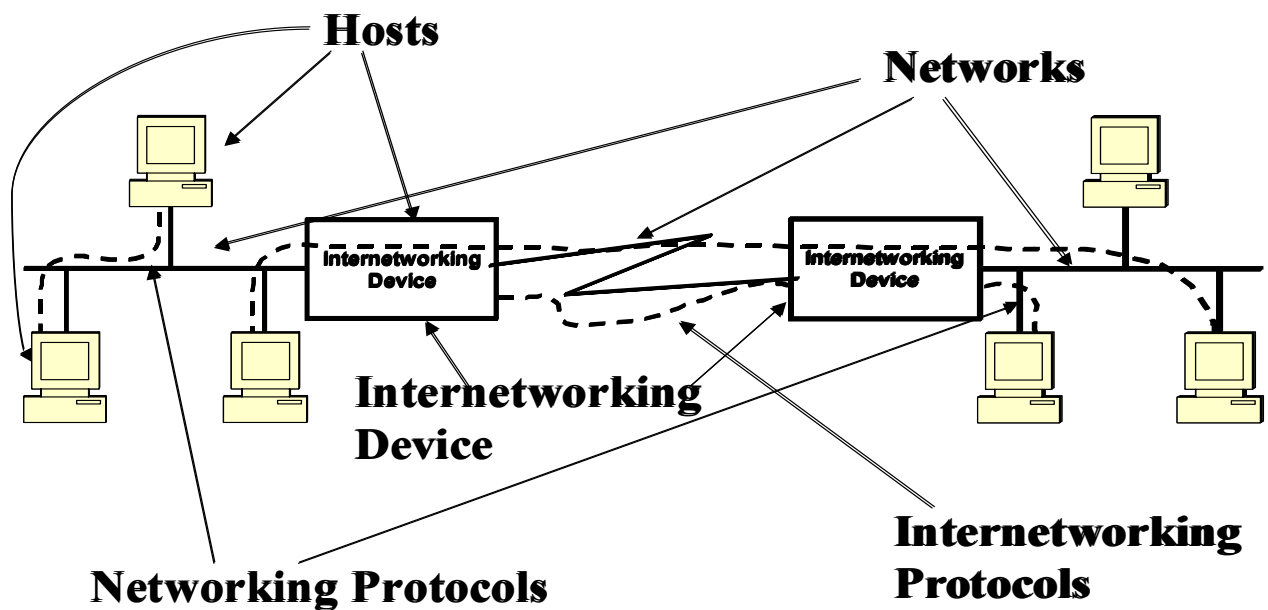
**Question 3:** Name the types of intermediate systems which work on the layer 1, 2 and 3 of the OSI Reference Model respectively. What are the names of the PDU's that each one of these intermediate systems handle or work with?

Layer	Intermediate System Name	PDU Name
Physical	Repeater	Bit
Data Link	Bridge/Switch	Frame
Network	Router	Packet, Datagram

**Question 4:** Label each of the following icons:



**Question 5:** Label each item in the following figure and define each term you label:



**Hosts** – devices that attach to networks. Generally computers but may be embedded computers e.g. printers, printer servers, routers, etc.

**Networks** – entities that provide communication capabilities to hosts

**Internetworking Device** – a special entity allowing information to travel from one network to another

**Networking Protocols** – rules of communication between hosts

**Internetworking Protocols** – special protocols allowing internetworking capabilities