



CS610- Computer Network

Solved Subjective
From Midterm Papers

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PSMD01

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1. Where are destination and source address located in frame? (2 marks)

Answer:- (Page 56)

The packet header includes destination and source addresses.

2. If 100mbps Ethernet NIC is connected to a hub which supports 10mbps, what will be the data rate in this scenario? (2 marks)

Answer:-

This has two consequences. First, the hub does not necessarily create a broadcast medium. Second, there are no collisions between traffic on 10 Mbps ports and 100 Mbps ports.

3. In connection oriented network, which type of connection identifier is used? Support your answer with example. (2 marks)

Answer:- (Page 66)

ATM uses the concept of connection-oriented networking.

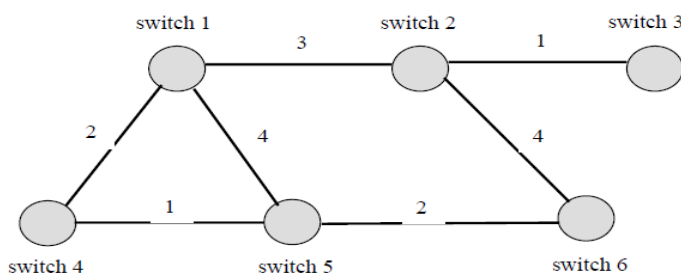
4. Imagine a network of 6 devices A, B, C, D, E and F. All devices are on same packet switch. If computer A wants to send packet to computer E, How would packet switch forward this packet? (3 marks)

Answer:-

path between switch A and F and the total distance traveled along this path

switch A – switch D – switch E

distance = 4



5. Network administrator needs audio and video service for his network. He has to send or receive data at same data rate. Which type of ATM quality service specification would be applied there?

Give example? (3 marks)

Answer:-

To facilitate the transport of audio and video data across emerging Asynchronous Transfer Mode (ATM) networks, a simple, low cost, audio/video ATM appliance, the AVATAR, has been developed. This appliance is capable of handling uncompressed bidirectional audio and NTSC video connections.

6. We have two satellite locations, at first location one bridge is configured and at second location 2 bridges are configured. Which location performed will be faster? Give reason. (3 marks)

Answer:- [Click here for detail](#)

Satellite locations with two bridges configured will performed faster. The brigade also had to provide power to virtually all of its East Timor assets. Setting up the satellite system, for example, required supplying power to both the communications station and the users' computers. A bridge that has multiple ports is known as a networking switch. Both bridges and switches are capable of directing traffic to specific network addresses instead of broadcasting the data to all devices on a network segment. This functionality makes the bridge or switches a more advanced networking device over a hub or repeater.

7. There are two sites office A & B, both are using VPN. If a user of another network wants to send some packet to A, then what will be the behavior of network A? How data is protected in VPN environment? (05 marks)

Answer:- [Click here for detail](#)

In theory when a machine on private network A wants to send a packet to a machine on private network B the packet is accepted by the VPN server. It is then encrypted and encapsulated within a standard IP packet that has a destination address corresponding to the VPN server at network B.

Notice that both VPN servers have to have to be "on the Internet" in the sense of having publicly accessible IP addresses. When the packet arrives at network B's VPN server it extracts the encapsulated private packet, decrypts it and sends it on its way within the local network. The machines within network A and B don't have to have publicly accessible address - that is they don't have to be on the public Internet. This way of using the public Internet to connect two machines that are not on the public internet is another advantage of the VPN approach.

As far as users of network A and B are concerned the VPN is as good as a dedicated physical connection. The idea of using public data packets to transfer embedded private data packets is often called "tunnelling" because it seems to create a data tunnel between the two networks.

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1. We have two satellite locations. At first location one bridge is configured and at 2nd location two bridges are configured. Which location's performance will be faster. Give reasons to support your answer. (5 marks)

Answer:- rep

2. Star Textile has huge network of systems and switches. A task is given to IT Officer that if some link goes the entire network works smoothly. Which routing method will be used? 5 marks

Answer:- [Click here for detail](#)

Distributed routing method is better for this purpose because Distributed routing relies on each node to compute its own routing table and build the required connections with its neighbors. Ideally, the network operation, status, and architecture of each node is transparent. Distributed routing is more flexible than centralized routing because each node handles its own routing. The result is often improved system performance.

3. Six devices are connected in network A,B,C,D,E and F. All devices are on same packet switch. Computer A wants to send packet to E. How will packet switch forwards the packet? 3 marks

Answer:- rep

4. Network administrator wants to build a tunnel between sites offices. How will he build using private virtual network? 3 marks

Answer:- [Click here for detail](#)

To establish a private network that can send data securely between these two locations or networks through a "tunnel." A VPN tunnel connects the two PCs or networks and allows data to be transmitted over the Internet as if it were still within those networks.

5. Who examines performance of network? 2 marks

Answer:- [Click here for detail](#)

Performance is probably the most closely monitored operational feature by users in the network environment

6. How can we compute shortest path in WAN? 2 marks

Answer:- (Page 62)

We use Dijkstra's algorithm to compute shortest path from each node to every other node.

7. 100Mbps Ethernet NIC is connected to control Hub which supports 10Mbps. What will be Data Rate in this scenario? 2 marks

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There are two sites office A & B, both are using VPN. If a user of another network wants to send some packet to A, then what will be the behavior of network A?

Answer:- rep

How data is protected in VPN environment? (05 marks)

Answer:- rep

What type of switching technique is used in WAN?

Answer:- (Page 55)

WANs can use circuit-switching or packet-switching techniques. To span long distances or many computers, networks must replace shared medium with packet switches. Each switch moves an entire packet from one connection to another. That's why they are called packet switches.

write the names of identifiers used in ATM.(2)

What type of topology used in Ethernet? (2).

Answer:- [Click here for detail](#)

Traditional Ethernet employs a bus topology, meaning that all devices or hosts on the network use the same shared communication line.

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Difference between LAN and WAN 2 marks

Answer:- (Page 4)

In LAN network occupies the smaller area like a room a floor or a building.

In WAN, network occupies larger areas like cities & countries. Internet is a Wide Area Network.

Why fiber need fir ATM 3 marks

define bridge 3 marks

Answer:- (Page 50)

A bridge is a hardware device also used to connect two LAN segments to extend a LAN. A typical bridge has two NICs, a CPU a memory and a ROM. It only runs the code stored in its ROM.

**ambiguity may cause the failure of any network, how parity bit check is consider in this situation
5 marks**

define default route how it is different from routing 5 marks

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Question: Defines simplex and full duplex connection? Marks 2

Answer:- (Page 76)

Some connection-oriented technologies provide full duplex while other allow on simplex connection. To communicate using a simplex design a pair of computers must establish two connections one from computer A to computer B and another from computer B to A.

Question: How WAN capable to handle many computers? Marks 2

Answer:- [Click here for detail](#)

A Wide Area Network (WAN) is a telecommunication network that covers a broad area.

Question: Briefly explains the working structure of thick Ethernet. Marks 2

Answer:- (Page 41)

It uses thick coax cable. AUI cable (or transceiver or drop cable) connects from NIC to transceiver. AUI cable carries digital signal from NIC to transceiver. The transceiver generates analog signal on coax cable. The wires in AUI carry digital signals power and other control signals. Thick Ethernet also requires terminators to avoid signal reflectance.

Question: Imagines a network for six devices: A, B, C, D, E and F. all devices are on a same packet switch. Computer A want to send packet to computer E. how would packet switch forward this packet? Marks 3

Answer:- rep

Question: Does ATM eliminate the varying delay times associated with different sized packets? If yes then give reason. Marks 2

Question: Why ATM design chose cells over packet? Marks 5

Answer:- (Page 72)

- Cells are not variable length and memory management for them is simpler. Handling variable length packets leads to memory fragmentation.
- Variable length packets require hardware to accommodate the largest possible packet, and thus to detect the end of the packet. With cells bits can just be counted as they arrive.
- The length of time required to send a variable length packet is variable and requires complicated interrupt scheme to detect completion of transmission. QoS can't be guaranteed with variable length packets as easily as it can with fixed length cells.

Question: Reception is a process of CPU; describe it in a few lines? Marks 5

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What is 10base T?

Answer:- [Click here for detail](#)

One of several adaptations of the Ethernet (IEEE 802.3) standard for Local Area Networks (LANs). The 10Base-T standard (also called Twisted Pair Ethernet) uses a twisted-pair cable with maximum lengths of 100 meters.

What is Multicasting?

Answer:- (Page 35)

It works like broadcasting however it does not forward frames automatically to the CPU.

The interface hardware is programmed in advance to accept certain frames that have multicast address as the destination address.

What is FDDI?

Answer:- (Page 31)

Fiber distributed data interconnect (FDDI) is another ring technology. Its most important features are:

- ❖ It uses fiber optics between stations and transmits data at 100Mbps.
- ❖ It uses pair of fibers to form two concentric rings.

Define 802.11 Wireless lans and CSMA?

Answer:- (Page 29)

IEEE 802.11 is standard wireless LAN that uses radio signals at 2.4GHz. Its data rate is 11Mbps. The older devices use radio signals at 900MHz and data rate of 2Mbps. Bluetooth specifies a wireless LAN for short distances. It uses shared medium and radio waves instead of coaxial cable.

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Define static and dynamic routing.(2)

Answer:- [Click here for detail](#)

Static Routing:-

Static routing is the simplest form of routing, but it is a manual process.

Dynamic Routing:-

Dynamic routing protocols are supported by software applications running on the routing device (the router) which dynamically learn network destinations and how to get to them and also advertise those destinations to other routers.

Dijkart's Algorithm 2 Marks

Answer:- rep

write note on Bridges 5 Marks

Answer:- rep

Disadvantages of Repeaters 3 Marks

Answer:- (Page 50)

Repeaters do not recognize frame formats, they just amplify and retransmit the electrical signal. If a collision or error occurs in one segment, repeaters amplify and retransmit also the error onto the other segments.

Different b/w Cells and Packets 5 Marks

Answer:- (Page 72)

ATM designers chose cells over packets because of the following reasons:

- Cells are not variable length and memory management for them is simpler. Handling variable length packets leads to memory fragmentation.
- Variable length packets require hardware to accommodate the largest possible packet, and thus to detect the end of the packet. With cells bits can just be counted as they arrive.
- The length of time required to send a variable length packet is variable and requires complicated interrupt scheme to detect completion of transmission. QoS can't be guaranteed with variable length packets as easily as it can with fixed length cells.

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21.What is the difference between the physical and logical topologies?(2)

Answer:-

Physical Topology:

The way that the workstations are connected to the network through the actual cables that transmit data -- the physical structure of the network -- is called the physical topology. It depends on the wiring scheme.

Logical Topology:

The logical topology, in contrast, is the way that the signals act on the network media, or the way that the data passes through the network from one device to the next without regard to the physical interconnection of the devices. We can say that it is defined by the specific network technology.

22. Define static and dynamic routing.(2)

Answer:- rep

23. What is meant by Bridges STARTUP and STEADY State?(3)

Answer:- (Page 51)

When a bridge first boots the address lists are empty (start up state). The bridge forwards frames to the other segment if it can not find its destination address in its lists.

After some time when the bridge has received at least one frame from every computer, it has the lists built (steady state) it forwards frames as far it is necessary.

24. How can Switched Virtual Network be established?(3)

Answer:- (Page 70)

ESTABLISHING AN SVC:

The computer sends a connection request to the switch to which it is attached. Software in the switch finds a network path to the destination and sends along the connection request.

Each pair of switches in the path communicates to choose a VPI/VCI for their tables. Once the connection is established by the destination, a message is sent back to the originating computer to indicate the SVC is ready.

If any switch or the destination computer does not agree to setting up the VC, an error message is sent back and the SVC is not established

25. What is the concept of packet switches?(5)

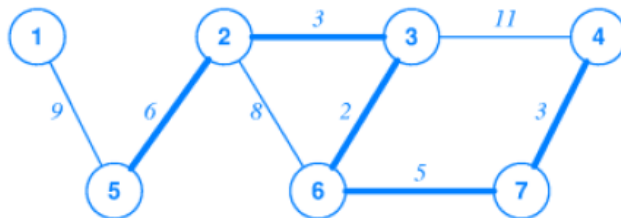
Answer:- (Page 55)

To span long distances or many computers, networks must replace shared medium with packet switches. Each switch moves an entire packet from one connection to another. That's why they are called packet switches. A packet switch consists of a small computer with network interfaces, a memory and a program dedicated to packet switching function.

26. Write a note on Weight Graph.(5)

Answer:- (Page 62)

Dijkstra's algorithm can accommodate weights on edges in graph. The shortest path is then the path with lowest total weight (sum of the weight with all edges). It should be noted that the shortest path is not necessarily with fewest edges (or hops). For example as shown in the figure below:



The shortest path in the figure from node 2 to node 6 is 2 to 3 and 3 to 6 as this path has the smallest weight so it is the shortest path.

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Question No: 21 (M a r k s: 2)

What is the difference between the physical and logical topologies?

Answer:- rep

Question No: 22 (M a r k s: 2)

Define Vector-Distance Algorithm.

Answer:- (Page 155)

Packet switches wait for next update message and they iterate through entries in message. If entry has shortest path to destination, insert source as next hop to destination and record distance as distance from next hop to destination plus distance from this switch to next hop.

Question No: 23 (M a r k s: 3)

What is the concept of store and forward technology?

Answer:- (Page 56)

STORE AND FORWARD:

Data delivery from one computer to another is accomplished through store and forward technology. In this technology packet switch stores incoming packet and also forwards that packet to another switch or computer. For this purpose packet switch has internal memory into which it can hold packet if outgoing connection is busy. Packets for each connection held on queue

Question No: 24 (M a r k s: 3)

How can Switched Virtual Network be established?

Answer:- rep

Question No: 25 (M a r k s: 5)

How can a bridge know whether to forward frames?

Answer:- (Page 53)

The bridges configure themselves automatically to decide which bridge will forward broadcast frames and which bridge will not.

The bridges communicate with each other on the network and use Distributed Spanning Tree (DST) algorithm to decide which bridge will not forward frames if a cycle occurs.

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Question No: 26 (Marks: 5)

Compare connection oriented and connectionless Service.

Answer:- [Click here for detail](#)

- ❖ In connection-oriented protocol, authentication is needed while this is not case in connectionless protocol.
- ❖ In connection-oriented protocol, we have to establish connection between sender and receiver while this is not case in connectionless protocol.
- ❖ Example of connection-oriented protocol is TCP and the example of connectionless protocol is UDP, Internet.
- ❖ TCP is a connection-oriented protocol, it makes a connection and checks whether the data is received, and resends if it is not. UDP is a connectionless protocol, it does not guarantee delivery by first connecting and checking whether data is received.

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Question No: 21 (Marks: 2)

What is the difference between LAN and WAN?

Answer:- rep

Question No: 22 (Marks: 2)

Define the term Jitter.

Answer:- rep

Question No: 23 (Marks: 3)

Give a comparison of wiring Schemes.

Answer:- (Page 44)

The wiring schemes are compared as follows:

Separate transceiver allows computers to be powered off or disconnected from network without disrupting other communication.

Transceiver may be located in an inconvenient place, so finely malfunction transceiver can be hard.

In other case, thin coax cable takes minimum of cable. Disconnecting one computer (on one loose connection) can disrupt entire network.

Hub wiring centralizes electronics and connections. It makes management easier. Bottom line 10Base-T is most popular because of lowest cost.

Question No: 24 (Marks: 3)

How can Switched Virtual Network be established?

Answer:- rep

Question No: 25 (Marks: 5)

Describe permanent virtual circuits (PVC).

Answer:- (Page 69)

ATM can provide customers with virtual circuits that look like traditional leased digital circuits. Such permanent virtual circuits (PVC) last as long as the customer pay the periodic fee for its use. The forwarding tables are automatically restored after power of equipment failure. The forwarding table entries for such permanent VC's are statically configured, the terms used by Telco's for this is provisioning.

Provisioning requires two steps:

1. To determine a complete path (that is, identify the switches that will be used).
2. To choose appropriate VPI/VCI for each step in the path, and configure each adjacent pair of switches (easy, since each switch rewrites the VCI/VPI).

Question No: 26 (Marks: 5)

What are default routes draw the table.

Answer:- (Page 60)

Routing table entries can be collapsed with a default route. If the destination does not have in explicit routing table entry, then it uses a default route. Default routes for 4 nodes are shown in the figure below.

destin- ation	next hop	destin- ation	next hop	destin- ation	next hop	destin- ation	next hop
1	-	2	-	1	(3,1)	2	(4,2)
*	(1,3)	4	(2,4)	2	(3,2)	4	-
		*	(2,3)	3	-	*	(4,3)
				4	(3,4)		
<i>node 1</i>		<i>node 2</i>		<i>node 3</i>		<i>node 4</i>	