**Question No: 1 ( M - 1 ) .**
**In Point-to-Point topology there are two topologies.**
► Star and Tree
► Tree and Ring
► Star and Ring
**► Star and Tree**
► None of the given

In *Point-to-Point* topology there are two topologies.
1) STAR topology

2) TREE topology
**Question No: 2 ( M - 1 ) .**
**------ Program sends a message to a remote computer and reports whether the computer responds.**
**► Ping**
► Traceroute
► ICMP
► Non of the given
Ping program tests reach ability. It sends datagram from B to A, that echoes back to B. it uses ICMP echo request and echo reply messages.

**Question No: 3 ( M - 1 ) .**
**------ has no way to determine the cause of the problem.**
► ICMP
**► Ping**
► Trace route
► Non of the given
Ping has no way to determine the cause of the problem. Tracing A Route Network administrators use another tool, trace route.

**Question No: 4 ( M - 1 ) .**
**The term----- ------- refers to the general concept of a small block of data**
**► Packet**
► Frame
► Data
► None of the given
Packet is a generic term that refers to small block of data. Packet have different format. Each hardware uses different packet format.

**Question No: 5 ( M - 1 ) .**

**---------- scheme, which is designed to help detect transmissions errors, send one extra bit of information with each character**

► **Parity**
► Checksums
► CRC
► None of given
A parity scheme, which is designed to help detect transmission errors, sends one extra hit of information with each character. Although it allows receiver to determine if a single bit has been changed parity can not detect transmission errors that change an even number of bits.

**Question No: 6 ( M - 1 ) .**
**Local Talk is a LAN technology that employs ----------**
► **Bus topology**
► Ring topology
► Star topology
► None of the given
LOCAL TALK:
Apple invented the LAN technology that uses bus topology. Its interface is included with all Macintosh computers.

**Question No: 7 ( M - 1 ) .**
**Most LANs that employ ring topology use an access mechanism known as-------**
► CSMA/CD
► CSMA/CA
► **TOKEN PASSING**
► None of the given
Most LANs that employ ring technology use an access mechanism known as *token passing*. A token ring operates as a single, shared medium. When a computer wants to send data, it must wait until it obtains the token, when it is in control of the ring

www.vuzs.net/
http://groups.google.com/group/vuZs

**Question No: 8 ( M - 1 ) .**
**Ethernet uses a ------ bit static addressing scheme in which each device is assigned a unique address by the manufacturer.**
► 64
► **48**
► 32
► 8

Ethernet uses a 48-bit static addressing scheme

**Question No: 9 ( M - 1 ) .**
**Formally named _____ informally known as the thick wire Ethernet or Thick net.**
► 10 Base 2
**► 10 Base 5**
► 10 Base T
► None of the given

**Thick Ethernet, officially known as 10 Base 5, is the oldest form of Ethernet. It was originally developed in the late 1970's by Digital Equipment Corporation, IBM, and Xerox, and became an international standard (IEEE 802.3) in 1983.**
**Taken from** http://www.maznets.com/tech/10base-5.htm

**Question No: 10 ( M - 1 ) .**
**Formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.**

► 10 Base 2
► 10 Base 5
**► 10 Base T**
► None of the given

twisted pair ethernet
Formally called 10 Base –T
- Also twisted pair Ethernet or simply TP Ethernet

www.vuzs.net/
http://groups.google.com/group/vuZs

**Question No: 11 ( M - 1 ) .**
**The maximum size of an Ethernet segment is_____**

► 250 meters
**► 500 meters**
► 700 meters
► None of the given

One Ethernet cable is sometimes called a segment. This segment is limited to 500 meters in length. The minimum separation between connections is 3 meters. (P# 27)

**Question No: 12 ( M - 1 ) .**
**A Bridge can _____**

► Filter a frame
► Forward a frame
► Extend a LAN
**► Do all the above**

A bridge is a hardware device also used to connect two LAN segments to extend a LAN. It listens to all traffic and recognizes frame format. It also forwards only correct complete frames and discards the collided and error frames.

The most important task a bridge performs is frame filtering.

**Question No: 13 ( M - 1 ) .**
**_____ computes shortest paths in a graph by using weights on edges as a measure of distance.**
► Greedy algorithm
► Distance vector algorithm
► **Dijksta's algorithm**
► Non of the given

Dijkstras algorithm computes shortest paths in a graph by using weights on edg as a measure of distance. A path with the fewest number of edges may not be the path with least weight. (P# 173 e-books)

**Question No: 14 ( M - 1 ) .**
**_____is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.**
► Constant Bit Rate (CBR) service
**► Variable Bit Rate (VBR) service**
► Available Bit Rate (ABR) service
► None of the given

VARIABLE BIT RATE (VBR):

It is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.

www.vuzs.net/
http://groups.google.com/group/vuZs

**Question No: 15 ( M - 1 ) .**
**Basic LAN technologies such as Ethernet, Token Ring, and FDDI use**

**a _____.**

**► Connectionless service paradigm**
► Connection-oriented service paradigm
► Both Connectionless and Connection-oriented service paradigm
► None of the given
Basic LAN technologies such **as Ethernet, Token Ring, and FDDI use a** connectionless service paradigm. Although a computer needs to wait for access to a shared medium before sending a packet
(zh,vuzs,nov10)

**Question No: 16 ( M - 1 ) .**
**The product of delay and throughput measures the _____ of data that can be present on the network.**
► Area
**► Volume**
► Length
► None of the given
DELAY THROUPUT PRODUCT:

It is computed as delay time multiplied by effective throughput. It measures

amount of data that can be present in the network (P# 80)

**Question No: 17 ( M - 1 ) .**
**A network with throughput T and delay D has a total of _____ bit in transit at any time.**
► T / D
**► T x D**
► T + D
► None of the given

A network with throughput T and delay D has a total of T x D bits in transit at
any time. (e-books)

**Question No: 18 ( M - 1 ) .**
**One repeater _____, two repeaters _____ the maximum cable length limitation.**
**► doubles, triple**
► square roots, cude roots
► and, triple

► doubles, cancel

One repeater doubles, two repeaters triple the maximum cable length limitation. (P# 49)

**Question No: 19 ( M - 1 ) .**

**A network uses a ------ if all computers attach to a central point**

► **Star Topology**
► Ring Topology
► Bus Topology
► None of the given

STAR TOPOLOGY:

In this topology, all computers are attached to a central point, which is sometimes called the "Hub" (P# 25)

**Question No: 20 ( M - 1 ) .**

**Computers attached to an ethernet use ------ in which a computer waits for the other to be idle before transmitting a frame.**

► **CSMA/CD**
► CSMA/CA
► TOKEN PASSING
► None of the given

All computers attached to the Ethernet use CSMA/CD to co-ordinate their activities. A computer wishing to transmit checks for electrical activity on the cable, informally called a *carrier*. If there is no carrier, the computer can transmit. If a carrier is present, the computer waits for the sender to finish before proceeding.

Question No: 1 ( M - 1 ) .

In broadcast topology there are two categories____.

► SATELLITE\RADIO
► RING TOPOLOGY
► Both a & b
► None of the above

Question No: 2 ( M - 1 ) .

The term ……..refers to the general concept of a small block of data

► Packet
► Frame
► Data
► None of the given

Question No: 3 ( M - 1 ) .

The term -------- is used to denote the definition of a packet used with a specific type of network.

- Packet
- Frame
- Data
- None of the given

Question No: 4 ( M - 1 ) .

- CRC can detect more errors than a simple checksum……
- True
- False

Question No: 5 ( M - 1 ) .

The Ethernet standard specifies that frames are sent using the --------Manchestor

Question No: 6 ( M - 1 ) .

Most LANs that employ ring topology use an access mechanism known as-------

- CSMA/CD
- CSMA/CA
- TOKEN PASSING
- None of the given

Question No: 7 ( M - 1 ) .

An ----------method, the network hardware designers specify how type information is included in the frame and the value use to identify various frame types.

- Explicit frame type
- Ideal frame type
- Implicit frame type
- None of the given

Question No: 8 ( M - 1 ) .

IEEE LLC/SNAP header is --------, which is used to specify the type of data.

- 8 octets
- 8 bytes
- 8 bits
- None of the given

Question No: 9 ( M - 1 ) .

Formally named _____ informally known as the thick wire Ethernet or Thick net.

- 10 Base 2
- 10 Base 5
- 10 Base T
- None of the given vuzs.net

Question No: 10 ( M - 1 ) .

Most NICs contain _____ circuitry that allows the NIC to operate independent of the CPU.

Question No: 11 ( M - 1 ) .

A bridges function in the _____ layers(s).

- ► Physical(MAC)
- ► Data Link
- ► Network
- ► Physical (MAC) and Datalink

Question No: 12 ( M - 1 ) .

A Bridge forwards or filters a frame by comparing the information in its address table to the frame's_____

- ► Layer 2 source address
- ► Source node's physical address
- ► Layer 2 destination address

► Layer 3 destination address

Question No: 13 ( M - 1 ) .

The next hop to which a packet is sent depends only on

- ► Packet's destination
- ► Packet's original source
- ► Path the packet has taken
- ► Non of the given

Question No: 14 ( M - 1 ) .

_____is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.

► Constant Bit Rate (CBR) service
► Variable Bit Rate (VBR) service
► Available Bit Rate (ABR) service
► None of the given

Question No: 15 ( M - 1 ) .

ATM assigns each VC a _____ identifier that is divided two parts to produce a hierarchy.

- ► 21-bit
- ► 22-bit
- ► 23-bit
- ► 24 bit

Question No: 16 ( M - 1 ) .

ATM was designed for _____ and use a_____

Question No: 17 ( M - 1 ) .

The product of delay and throughput measures the _____ of data that can be present on the network.

► Area
► Volume
► Length
► None of the given

Question No: 18 ( M - 1 ) .

A typical port on an ATM switch operates at _____ or higher.

► OC-2 speed (155Mbps)
► OC-3 speed (100Mbps)
► OC-3 speed (155Mbps)
► OC-3 speed (155Gbps)

Question No: 19 ( M - 1 ) .

A- interface ---- provides mechanism that automatically assigns a physical address to a station when the station first boots.

Question No: 20 ( M - 1 ) .

By size there are.....classifications of networks.

► 2
► 3
► 4
► 1

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

Static routing:

Static routing is not really a routing protocol. Static routing is simply the process of manually entering routes into a device's routing table via a configuration file that is loaded when the routing device starts up

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. This advertisement function allows all the routers to learn about all the destination networksthat exist and how to those networks. It is more rebust.

Static routing allows routing tables in specific routers to be set up in a static manner so network routes for packets are set. If a router on the route goes down the destination may become unreachable. Dynamic routing allows routing tables in routers to change as the possible routes change.

22. Define static and dynamic routing.(2)

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

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

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

Packet-switches describes the type of network in which relatively small units of data called packets are routed through a network based on the destination address contained within each packet. Breaking communication down into packets allows the same data path to be shared among many users in the network. One common class of contemporary packet switches are the bridge and network hub, which interconnect multiple network segments at the data link layer. Another is the router, a device which operates at the internetwork layer, and connects dissimilar kinds of networks, such as serial lines and local area networks.

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

The concept of a weighted graph is extremely useful. The weights can be thought of, for example, as the cost of sending a message down a particular arc. (Not necessarily a monetary cost but some combination of time and distance for example). Weighted graphs can be used to formulate the shortest path problem for routing packets.

**Question No: 1 ( M - 1 ) .**

No error detection scheme is perfect because transmission errors can affect the additional information as well as the data.

**► True**

► False

No error detection scheme is perfect because transmission errors can affect the additional information as well as the data. A cyclicly redunduncy chcek, which is slightly more difficult to computer can detect more errors then a Parity or Check sum mechnasim.

**Question No: 2 ( M - 1 ) .**

------ Program sends a message to a remote computer and reports whether the computer responds.

**► Ping**

► Traceroute

► ICMP

► Non of the given

**Question No: 3 ( M - 1 ) .**

---------- was especially concerned about the lack of high powered computers.

**► ARPA**

► IEEE

► EIA

► Non of the given

The US Department of Defense Advanced Research Projects Agency (ARPA) was especially concerned about the lack of high-powered computers. Many of the ARPA research projects needed access to the latest equipment

**Question No: 4 ( M - 1 ) .**

The term -------- is used to denote the definition of a packet used with a specific type of network.

► Packet

**► Frame**

► Data

► None of the given
To help distinguish between the general idea of packet transmission and the specific definition of packets for a given hardware technology, we use the term frame to denote the definition of a packet used with a specific type of network. Thus one might refer the maximum amount of data a frame can hold or the order in which bits of a frame are sent across a network.

**Question No: 5 ( M - 1 ) .**
Computer networks are often called ---------- because they use packet technology.
► Ethernet
► Switch networks
► Packet networks
► None of the given
www.vuzs.net/
http://groups.google.com/group/vuZs

**Question No: 6 ( M - 1 ) .**
---------- have advantages arisen from the size and ease of computation.
► CRC
► Parity
► Checksums
► None of given

**Question No: 7 ( M - 1 ) .**
Most LANs that employ ring topology use an access mechanism known as-------
► CSMA/CD
► CSMA/CA
**► TOKEN PASSING**
► None of the given
Most LANs that employ ring technology use an access mechanism known as *token passing*. A token ring operates as a single, shared medium. When a computer wants to send data, it must wait until it obtains the token, when it is in control of the ring

**Question No: 8 ( M - 1 ) .**
IEEE LLC/SNAP header is --------, which is used to specify the type of data.
**► 8 octets**
► 8 bytes
► 8 bits
► None of the given

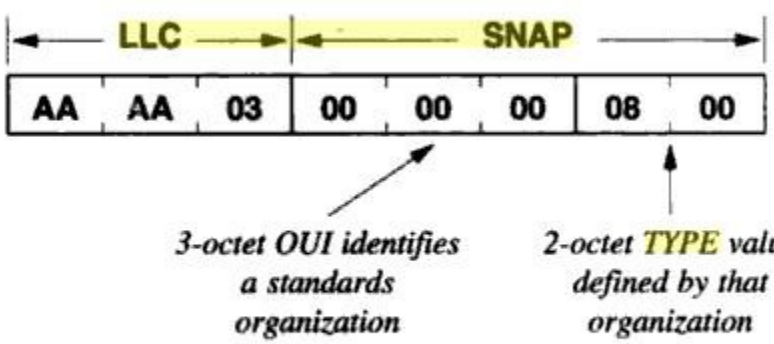



**Figure 9.6** An example of the 8-octet IEEE LLC/SNAP header, which is used to specify the type of data. The SNAP portion specifies an organization and a type defined by that organization.

www.vuzs.net/
http://groups.google.com/group/vuZs

**Question No: 9 ( M - 1 ) .**
Formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.
► 10 Base 2
► 10 Base 5
**► 10 Base T**
► None of the given

twisted pair ethernet
•~~€€€€€€€€~~Formally called 10 Base –T
•~~€€€€€€€€~~Also twisted pair Ethernet or simply TP Ethernet

**Question No: 10 ( M - 1 ) .**
An interface for twisted pair Ethernet must have an _____ connector , and must generate signals according to the_____ specification.
**► RJ-45, 10 Base T**
► RJ-45, 10 Base 5
► BNC, 10 Base 2
► BNC, 10 Base T
an interface for twisted pair Ethernet must have an RJ-45 connector, and must generate signals according to the 10BaseT specification. (P# 683 E-books)

**Question No: 11 ( M - 1 ) .**
A bridges function in the _____ layers(s).
► Physical (MAC)

► Data link
►Network
► Physical (MAC) and Data link
http://highered.mcgraw-hill.com/sites/0072967722/student_view0/chapter_3_quiz.html

**Question No: 12 ( M - 1 ) .**

A Bridge can _____
► Filter a frame
► Forward a frame
► Extend a LAN
**► Do all the above**

A bridge is a hardware device also used to connect two LAN segments to extend a LAN. It listens to all traffic and recognizes frame format. It also forwards only correct complete frames and discards the collided and error frames.
The most important task a bridge performs is frame filtering.
www.vuzs.net/
http://groups.google.com/group/vuZs

**Question No: 13 ( M - 1 ) .**

A Bridge forwards or filters a frame by comparing the information in its address table to the frame's_____
► Layer 2 source address
► Source node's physical address
**► Layer 2 destination address**
► Layer 3 destination address

**Question No: 14 ( M - 1 ) .**

_____ computes shortest paths in a graph by using weights on edges as a measure of distance.
► Greedy algorithm
► Distance vector algorithm
**► Dijksta's algorithm**
► Non of the given

Dijkstras algorithm computes shortest paths in a graph by using weights on edg as a measure of distance. A path with the fewest number of edges may not be the path with least weight. (P# 173 e-books)

**Question No: 15 ( M - 1 ) .**

_____ is used for audio and video, since these have predefined maximum data rates
► Constant Bit Rate (CBR) service
► Variable Bit Rate (VBR) service
► Available Bit Rate (ABR) service
► None of the given

*CONSTANT BIT RATE (CBR):*
**It is used for audio and video, since these have predefined maximum data rates.**
**(Omer Chaudhry**

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http://groups.google.com/group/vuZs

**Question No: 16 ( M - 1 ) .**
Unlike Frame Relay and ATM, SMDS (Switched multi-megabit Data service) offers_____ .
**► Connectionless service paradigm**
► Connection oriented service paradigm
► Both Connectionless and Connection-oriented service paradigm
► None of the given
Switched Multi megabit Data Service (SMDS) is also a Telco service. It is a connection less service.
FRAME RELAY:
It is used for Telco service for delivering blocks of data. It is connection based Service ATM uses the concept of connection-oriented networking

**Question No: 17 ( M - 1 ) .**
A network with throughput T and delay D has a total of _____ bit in transit at any time.
► T / D
**► T x D**
► T + D
► None of the given
A network with throughput T and delay D has a total of T x D bits in transit at any time. (e-books)
**Question No: 18 ( M - 1 ) .**
ATM is designed to work on_____.
► Twisted Pair
► Coaxial
► Radio Frequency
**► Fiber**
ATM is designed to work on fiber (but can be used with twisted pair). (P# 72)
www.vuzs.net/
http://groups.google.com/group/vuZs

**Question No: 19 ( M - 1 ) .**
Computers attached to an ethernet use ------ in which a computer waits for the ether to be idle before transmitting a frame.
**► CSMA/CD**
► CSMA/CA
► TOKEN PASSING
► None of the given
All computers attached to the Ethernet use CSMA/CD to co-ordinate their activities. A computer wishing to transmit checks for electrical activity on the cable, informally called a *carrier*. If there is no carrier, the computer can transmit. If a carrier is present, the computer waits for the sender to finish before proceeding

**Question No: 20 ( M - 1 ) .**
FDDI can transmits data at a rate of ----------
**► 100 million bits per second**
► 10 million bits per second
► 1000 million bits per second
► None of the given
**FDDI:** 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.

**_____ has a jitter zero**
None of the given
Virtual Private Network
**Isochronous Network**
Asynchronous Network

**Unlike Frame Relay and ATM, SMDS (Switched multi-megabit Data service) offers_____.**
**Connectionless service paradigm**
Connection oriented service paradigm
Both Connectionless and Connection-oriented service paradigm
None of the given

**ATM assigns each VC a _____ identifier that is divided two parts to produce a hierarchy.**
21-bit
22-bit
23-bit
**24-bit**
The VC is identified by a 24-bit value formed from the VPI or Virtual Path Indicator (8-bit),

**Most WAN systems include a mechanism that can be used to eliminate the common case of duplication routing is called_____**
Hierarchal address
**Default route** Shortest path
None of the given

**The next hop to which a packet is sent depends only on**
**Packet's destination**
Packet's original source
Path the packet has taken
Non of the given

**An interface for twisted pair Ethernet must have a _____ connector, and must generate signals according to the_____ specification.**

**RJ-45, 10 Base T**

RJ-45, 10 Base 5

BNC, 10 Base 2

BNC, 10 Base T

(zh,vuzs,nov10)

**When an application_____ data, it makes a copy of the data available to all other computers on the network.**

**Broadcasting**

Multicasting

Unicasting

None of the given

When an application broadcasts data, it makes a copy of the data availableto all other computers on the network. Broadcast has many uses. For example, suppose a computer needs to find one of the printers on the network

**A _____ provide a mechanism that a customer can use to set a physical address.**

Static addressing scheme

**Configurable addressing scheme**

Dynamic addressing scheme

None of the given

One of the advantages of a configurable addressing scheme becomes apparent when network interface hardware fails and must be replaced: unlike hardware that uses a static assignment, a configurable interface can be replaced

FDDI can transmits data at a rate of _____

**100 million bits per second**

100 million bits per second

100 million bits per second

None of the given

**FDDI:** 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.

**Computers attached to an ether use ------ in which a computer waits for the ether to be idle before transmitting a frame.**

**CSMA/CD**

CSMA/CA

TOKEN PASSING

None of the given

**_____ has advantages arisen from the size and ease of computation.**
CRC
Parity
**Checksums**
None of given
The chief advantages arise from the size and ease of computation. Most networks that employ a checksum technique use a 76-bit or J2-bit checksum, and compute a single checksum for an entire packet.

**The term _____ is used to denote the definition of a packet used with a specific type of network.**
Packet
**Frame**
Data
None of the given
To help distinguish between the general idea of packet transmission and the specific definition of packets for a given hardware technology, we use the term frame to denote the definition of a packet used with a specific type of network

**_____ has no way to determine the cause of the problem.**
**Ping**
Trace route
ICMP
Non of the given
Ping has no way to determine the cause of the problem. Another reason why ping may fail to generate a response is less subtle: some companies configure their site to reject ping packets.

**_____ Program sends a message to a remote computer and reports whether the computer responds.**
**Ping**
Trace route
ICMP
Non of the given

**In _____, network occupies the smaller area like a room a floor or a building.**
**LAN**
WAN
MAN
None of the given

**Question No: 16 ( M - 1 ) .**
No error detection scheme is perfect because transmission errors can affect the additional information as well as the data.

Question No: 17 ( M - 2 ) Format is not clear even I try to do with cntl+A and then change format with 12/Times new roman or ariel. But fail

Question No: 18 ( M - 2 )

Question No: 19 ( M - 3 )

**Question No: 20 ( M - 5 )**
Which type of information is obtained from network sniffer and in which mode Network sniffer operates?

**Solution:**
A network analyzer also called network monitor or a network sniffer is used to examine the performance of or debug a network. It can report statistics such as capacity utilization, distribution of frame size, collision rate or token circulation time
Most installations still use DIX Ethernet encoding in which there is no LLC/SNAP header in the frame. A network analyzer can tell from the values in the type field (small values are lengths, which mean an LLC/SNAP header is located in the first octets of the data area; large values are types, which mean no LLC/SNAP header is included).

The operation of network analyzer is a computer with a network interface that receives all frames, which is called promiscuous mode. So many desktop computers have interface that can be configured for promiscuous mode. When combined with software computer can examine any frame on LAN. In this way the communication across LAN is guaranteed to be private. Computer receives and displays frames on the LAN.
Network analyzer can be configured to filter and process frames. It can count frames of specific type of size. It displays only frames from or to specific computers.

**Question No: 21 ( M - 10 )**
Thick Ethernet, Thin Ethernet and Twisted pair Ethernet.

**Solution:-**

**Thick Ethernet:**
Thick Ethernet, officially known as 10 Base-5, is the oldest form of Ethernet.
One form of cabling supported by Ethernet is low-loss 50 Ohm coaxial cable as shown in the figure below. This type of cable is 0.5" diameter (usually supplied with a yellow outer PVC coating) and rather inflexible. It has become known in the communications industry as "Thick Ethernet". The official name for this cable is 10 Baseband5 (10B5), indicating that it is specified for baseband communications at 10 Mbps over distances up to 500m.

**Thin Ethernet:**

Thin Ethernet, officially called 10 Base-2, is a less expensive version of 10 Base-5 (Thick Ethernet) technologies. It uses a lighter and thinner coaxial cable and dispenses with the external transceivers used with 10 Base-5.

10 Base-2 uses an RG-58A/U coaxial cable and is wired in a bus topology. Each device on the network is connected to the bus through a BNC "T" adapter, and each end of the bus must have a 50 Ohm terminator attached. Each node on the bus must be a minimum of 0.5 meters (1.5 feet) apart, and the overall length of the bus must be less than 185 meters (606 feet).

**Twisted Pair Ethernet:**

Twisted Pair Ethernet (10baseT), sometime also called "UTP" from "Unshielded Twisted Pair", is based on using a cable similar to phone-wiring. The cable is connected via RJ-45 connectors to the network card installed in the PC.

**A typical port on an ATM switch operates at _____ or higher.**

- ► OC-2 speed (155Mbps)
- ► OC-3 speed (100Mbps)
- ► **OC-3 speed (155Mbps)**
- ► OC-3 speed (155Gbps)

A typical port on an ATM switch operates at OC-3 speed (155 Mbps) or higher, with the largest and most expensive switches handling much higher capacities

**The product of delay and throughput measures the _____ of data that can be present on the network.**

- ► Area
- ► **Volume**
- ► Length
- ► None of the given

To summarize: The product of delay and throughput measures the volume of data that can be present on the network. A network with throughput T and delay D can have a total ofT×D bits in transit at any time

**_____is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.**

Constant Bit Rate (CBR) service
**Variable Bit Rate (VBR) service**

Available Bit Rate (ABR) service
None of the given

VARIABLE BIT RATE (VBR):
It is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.

**Which of the following is a connecting device?**

Bridge
Repeater
Hub
**All the given**

**A bridges function in the _____ layers(s).**

Physical (MAC)
Data link€
Network

**Physical (MAC) and Data link ►**
http://highered.mcgraw-hill.com/sites/0072967722/student_view0/chapter_3_quiz.html
**IEEE LLC/SNAP header is --------, which is used to specify the type of data.**
**8 octets**

8 bytes
8 bits
None of the given
X Packet Type (PT), the five values of which were listed previously, in Table 7-2. The IEEE 802. IX Packet Body Length (PBL) follows the Packet Type. Because the LLC/SNAP header is eight octets long, and the IEEE 802
**The third field of the header consists of ------ bit Ethernet frame type.**

48
32
**16**
8
(zh,vuzs,nov10)

**An ----------method, the network hardware designers specify how type information is included in the frame and the value use to identify various frame types.**

**Explicit frame type**
Ideal frame type
Implicit frame type
None of the given
EXPLICIT FRAME TYPE:
In this type the identifying value is included with frame describes types of included data.

**Local Talk is a LAN technology that employs _____**

Star topology
**Bus topology**
Ring topology
None of the given
Almost altogether network technologies use different wiring schemes. e.g., local talk uses hubs
(physical star) to simulate a bus topology.
**The Fast Ethernet hardware operates at a rate of _____**
10 Mbps
**100 Mbps**
1000 Mbps
None of the given
The Ethernet speed was originally 3Mbps, and the current standard is 10Mbps
the fast Ethernet operates at 100Mbps. There are also gigabits Ethernet available now

**_____scheme, which is designed to help detect transmissions errors, send one extra bit of information with each character**
**Parity**
Checksums
CRC
None of given www.vuzs.net

**Computer networks are often called ---------- because they use packet technology.**
Ethernet
Switch networks
**Packet networks**
None of the given
**Computer networks are often called** packet networks or packet switching networks because they use packet technology

_____Program sends a message to a remote computer and reports whether the computer responds.

**Ping**
Trace route
ICMP
Non of the given
The ping program sends a message to a remote computer and reports whether the computer responds; the traceroute program identifies intermediate computers along a path to a remote destination. Ping and traceroute software is included in
In _____ network occupies larger areas like cities & countries.
LAN
**WAN**
MAN
None of the given

**In ----------, network occupies the smaller area like a room a floor or a building.**
**LAN**
WAN
MAN
None of the given

**In *Point-to-Point* topology there are two topologies.**
**Tree and Ring**
Star and Ring
Star and Tree
None of the given

POINT-TO-POINT:
In Point-to-Point topology there are two topologies.
1) STAR topology
2) TREE topology

**www.vuzs.net**
**http://www.vuzs.net**
**Question No: 17 ( M - 2 )**

**Question No: 18 ( M - 2 )**

**Question No: 19 ( M - 3 )**
Why 10-base T wiring scheme is called star shaped bus wiring scheme.
**Question No: 20 ( M - 5 )**
What are the main factors due to which mechanism of error detections schemes differ?
**Question No: 21 ( M - 10 )**
How much data can be present on an original Ethernet segment at one time? To find out, compute the delay-throughput product. The original Ethernet operate at 10 mega

bits per second, and a segment was limited to 500 meters. Assume the signals propagate down the cable at 66 percent of the speed of light.
www.vuzs.net

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 use?

Answer:- 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.

mainay ghalati say distributed routing key jagah distributed topology likh dia hai dua karain examiner ankhain band karkay paper check karay.

**Qno.15 Suppose an organization wants voice communication in a network by using ATM technology. Explain how ATM eliminates the varying delays associated with variable size data packets.**

**Answer:-**

Organization wants voice communication introduced ATM to meet several goals. It provides universal service for all subscribers and support for all users for voice, video and data. It has a single unified infrastructure (no separate LANs and WANs). It gives guaranteed service when it is appropriate and support for low cost devices.

**JITTER:**

Jitter is the term used for variance in transmission delays. Jitter is significance for voice, video and data. In LANs, jitter can occur when a packet is delayed because the network is busy.

**PACKET SIZES:**

Large packets result in fewer overheads because a smaller fraction of the packet is used for header information. Optimum networks use 4kB packets or larger. Large packets can't easily be used for voice for example 8-bit samples (at 125usec per sample) would require half a second to fill a 4kB packet. Echo cancellation can only be used with low transmission delays.

- Top of Form

▸ Reply

Bottom of Form

- Message




Permalink Reply by M.Tariq Malik on December 14, 2012 at 8:20pm

Mera cs610 ka Paper acha ho gaya mostly paper mcq past main say thay aur 3 question bhi aur yah sab moaz wali file say mcq aur subjective kay 3 question aye that.

------ Program sends a message to a remote computer and reports whether the computer responds.

▸ Ping (Computer Networks and Internets, page9)

▸ Traceroute

► ICMP
► Non of the given
---------- was especially concerned about the lack of high powered computers.
► ARPA (Computer Networks and Internets, page5)
► IEEE
► EIA
► Non of the given
Computer networks are often called ---------- because they use packet technology.
► Ethernet
► Switch networks
► Packet networks (Computer Networks and Internets, page 73)
► None of the given
Unlike Frame Relay and ATM, SMDS (Switched multi-megabit Data service) offers_____ .
► Connectionless service paradigm (Computer Networks and Internets, page112)
► Connection oriented service paradigm
► Both Connectionless and Connection-oriented service paradigm
► None of the given
ATM is designed to work on_____.
► Twisted Pair
► Coaxial
► Radio Frequency
► Fiber (Computer Networks and Internets, page 72)
Local Talk is a LAN technology that employs ----------
► Bus topology (Page 30)
► Ring topology
► Star topology
► None of the given
The product of delay and throughput measures the _____ of data that can be present on the network.
► Area
► Volume (Page 80)
► Length
► None of the given
One repeater _____, two repeaters _____ the maximum cable length limitation.
► doubles, triple (Page 49)
► square roots, cude roots
► and, triple
► doubles, cancel
A network uses a ------ if all computers attach to a central point
► Star Topology (Page 25)
► Ring Topology
► Bus Topology
► None of the given
In ---------, network occupies larger areas like cities & countries.
LAN ►
WAN (Page 4) ►
MAN ►
None of the given ►

_____ has a jitter zero

► None of the given

► Virtual Private Network

► Isochronous Network

► Asynchronous Network

A ---------- provide a mechanism that a customer can use to set a physical address.

Static addressing scheme ►

Configurable addressing scheme (Page 34) ►

Dynamic addressing scheme ►

None of the given ►

Top of Form

► Reply

Bottom of Form

- Message




Permalink Reply by M.Tariq Malik on December 14, 2012 at 8:21pm

We say that Bridges is a intelligent device ....Give reasons

Write down the type of network performance?

What type of switching technique is used in WAN?

Suppose you are a Network Engineer in ISP, providing different technologies services like one of these may be cell based network, as Network Engineer you must know that which term is used to refer “information” related to the network but not refers to the “information” that only uses the network, give name of this term and reserved values.

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? Give 3 reasons(05 marks)

Suppose, There are two sites office A & B Far away from each other, Which technolgy is used,LAN or WAN, give 4 reasons?

Top of Form

► Reply

Bottom of Form

- Message



Permalink Reply by M.Tariq Malik on December 14, 2012 at 8:21pm

my toDay PapEr

All Mcqs from Moaz file and

------ has no way to determine the cause of the problem.

- ICMP
- Ping (Computer Networks and Internets, page 11)
- Trace route
- Non of the given

Question No: 2 ( Marks: 1 ) - Please choose one

------ Program sends a message to a remote computer and reports whether the computer responds.

_ Ping (P-11)

_ Trace route

_ ICMP

_ Non of the given

Most LANs that employ ring topology use an access mechanism known as-------

- CSMA/CD
- CSMA/CA
- TOKEN PASSING (Computer Networks and Internets, page95)
- None of the given

Formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.

- 10 Base 2
- 10 Base 5
- 10 Base T (Page 43)
- None of the given

An interface for twisted pair Ethernet must have an _____ connector , and must generate signals according to the_____ specification.

- RJ-45, 10 Base T (Computer Networks and Internets, page 126)
- RJ-45, 10 Base 5
- BNC, 10 Base 2
- BNC, 10 Base T

A Bridge can _____

- Filter a frame
- Forward a frame
- Extend a LAN
- Do all the above

ATM used in ------- and have

- WAN Connectionless service paradigm
- LAN Connection oriented service paradigm
- Both LAN and WAN  Connection-oriented service paradigm
- Both LAN and WAN  Connectionless service paradigm (Computer Networks and Internets, page112)

A network with throughput T and delay D has a total of _____ bit in transit at any time.

► T / D
► T x D (Computer Networks and Internets, page203)
► T + D
► None of the given

Local Talk is a LAN technology that employs ----------
► Bus topology (Page 30)
► Ring topology
► Star topology
► None of the given

One repeater _____, two repeaters _____ the maximum cable length limitation.
► doubles, triple (Page 49)
► square roots, cude roots
► and, triple
► doubles, cancel

A network uses a ------ if all computers attach to a central point
► Star Topology (Page 25)
► Ring Topology
► Bus Topology
► None of the given

In ---------, network occupies larger areas like cities & countries.
LAN ►
WAN (Page 4) ►
MAN ►
None of the given ►

ATM assigns each VC a _____ identifier that is divided two parts to produce a hierarchy.
21-bit ►
22-bit ►
23-bit ►
24-bit (Page 67) ►

Static addressing scheme ► A ---------- provide a mechanism that a customer can use to set a physical address.
Configurable addressing scheme (Page 34) ►
Dynamic addressing scheme ►
None of the given ►

Remaining 5 MCQ's r new

Read more: CS610 Today's paper subjective - Virtual University of Pakistan http://vustudents.ning.com/group/cs610computernetwork/forum/topics/cs610-today-s-paper-subjective#ixzz2mAtj4TLy
Read more at http://vustudents.ning.com/group/cs610computernetwork/forum/topics/cs610-today-s-paper-subjective#VdMHLBzRKex1KOc8.99

Qno.1 in LAN of 8 pcs, at low cost which wire scheme you will use. Give reasons
Answer:-
Reasons:-

- · Twisted pair Ethernet is the cheapest wiring that makes it so popular.

- · To allow changing the wiring without changing the interface hardware, NICs support
- · Multiple wiring schemes are not limited to Ethernet technology.
- · hubs (physically a star topology) to simulate a logical ring network.
- · The distance between devices
- · The amount of em-noise

REF:: Handouts Page No. 45,47

Qno.2 **how many** bits contains in VCI & VPI

Answer:-

- · Virtual Channel Indicator (16-bits)
- · Virtual Path Indicator (8- bit),

REF:: Handouts Page No. 67

Qno.3 we have a bridge network that has two segments. is that possible to transfer data simultaneously through segments ?

Unlike a repeater, a bridge uses two NICs to connect two segments. It listens to all traffic and recognizes frame format. It also forwards only correct complete frames and discards the collided and error frames. A typical bridge has two NICs, a CPU a memory and a ROM. It only runs the code stored in its ROM. A network bridge can be used to segment one network into two, thereby reducing the number of devices competing for transmission privileges.

**For example,**

if network A has 20 devices, there is the likelihood that two or more of them will attempt to transmit data at the same time and cause a collision. If a network bridge is added, it can split network A into networks A and B of 10 devices each.

REF:: Handouts Page No. 50

Qno.3 **is there any technology that use LAN and WAN both topologies. if yes then write its Name**

**Star Topology,** all computers are attached to a central point, which is sometimes called the Hub

**Ring Topology** network the computers are connected to each other in closed loop. In this network first computer passes data to the second and then second passes data to third and so on,

**REF:: Handouts Page No. 25**

**Qno.4 why packet switch check the header frame before forwarding the packet**

**Answer:-**

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.

**REF:: Handouts Page No. 56**

**Qno.5 Why the designer of ATM technology select cells not packets? Give five reasons**

**Answer:-**

**Reason:**

1. ATM multiplexed these 53-byte cells instead of packets which reduced worst-case cell contention jitter by a factor of almost 30, reducing the need for echo cancellers.
2. Reduction of jitter (and also end-to-end round-trip delays)
3. Full-length 1500 byte (12000-bit) data packet would take 77.42 to transmit.
4. The design of ATM aimed for a low-jitter network interface

5. ATM broke up all packets, data, and voice streams into 48-byte chunks, adding a 5-byte routing header to each one so that they could be reassembled later

**REF:: Handouts Page No. 66**

**http://en.wikipedia.org/wiki/Asynchronous_Transfer_Mode**

**Qno.6 If two far away situated offices are to connect with will be appropriate LAN extension or WAN. Give four reasons to support you answer**

1. If two buildings are located far from each other, a bridge, a pair of fiber modems and an optical fiber can be used to connect two LANs
2. LAN segments that need to be interconnected but are slightly far away, point to point wireless solutions are available
3. They are generally kept over a tower so that line of sight is realized between the locations, for best performance.
4. These outdoor access points are configured to operate in the point-to-point or point-to-multipoint modes and one such access point along with antenna/tower is required in each department/building which needs to be interconnected.
5. In certain areas, metro Ethernet might be available where the service provider has the infrastructure to connect two locations of a same branch located in different places at speeds of 10/100 Mbps using his public network infrastructure

**REF:: Handouts Page No. 51**

**http://www.excitingip.com/653/what-are-the-various-ways-to-extend-a...**

**Qno.7 writes three benefits of routing if source address is not included in the header**

**Answer:-**

Benefit

It allows fast and efficient routing.

Packet switch need not hove complete information about all destinations in spite it just has next The network can continue to function even if topology changes without notifying entire network

**REF:: Handouts Page No. 58**

**Qno.8 How many methods are available to span a network over longer distances? Just write their names. (2 Marks)**

**Answer:-**

1. LEASED SERIAL LINE CONNECTION:
2. LEASED SATELLITE CHANNEL:

**REF:: Handouts Page No. 52**

**Qno.9 which two identifier in ATM are used to make Virtual Circuit? (2 Marks)**

**Answer:-**

VCI (Virtual Channel Indicator)

VPI (Virtual Path Indicator)

**REF:: Handouts Page No. 67**

**Qno.10 conceptual question about Virtual private Network.(marks 3)**

**Answer:-**

Virtual Private Network (VPN) combines the features of both private and public networks. It is limited to single organization and uses public network for connectivity. These connections are sometimes called tunnels and connect sites. Each site sees tunnel as point-to-point link. There is no access for other users of public networks.

**REF:: Handouts Page No. 75**

**Qno.11 Describe the procedures in steps of Telephone calling, A connection oriented service (Marks5)**

**Answer:**

The connection-oriented service paradigm for networking is similar to the manner in which telephones are used. This is given as follows:

A caller dials a number of the destination. The telephone at the destination signals the arrival of a connection request. If the called person does not answer; the caller gives up after waiting for a timeout. If the called person does answer, then the connection is established as binary connection identifier is given to each of the two parties to enable identification of the connection.

**REF:: Handouts Page No. 67**

**Qno.12 Describe two major components of thick Ethernet (2)**

**Answer:-**

1. Network interface card (NIC)
2. Analog electronic device

**REF:: Handouts Page No. 42**

**Qno.13 Suppose in a computer network of a chemical company, each packet is transferred with equal amount of time between systems. Consider this scenario what will be the jitter?(2)**

**Answer:-**

The amount of delay that a network introduces is called jitter. A network with zero jitter takes exactly the same amount of time to transfer each packet. A network with high jitter takes much longer to deliver some packets than others

**REF:: Handouts Page No. 80**

**Qno.14 Suppose in university campus, bridges are used in its local are network. Explain all steps, how bridge build up address list table of all attached computers. (3)**

**Answer**:-

University campus implement bridges to attached the computers, bridges as a frame arrives to it, extracts a source address from its header and automatically adds it in the list for that segment. In this way a bridge builds up address lists.

**REF:: Handouts Page No. 50**

**Qno.15 Suppose an organization wants voice communication in a network by using ATM technology. Explain how ATM eliminates the varying delays associated with variable size data packets.**

**Answer:-**

Organization wants voice communication introduced ATM to meet several goals. It provides universal service for all subscribers and support for all users for voice, video and data. It has a single unified infrastructure (no separate LANs and WANs). It gives guaranteed service when it is appropriate and support for low cost devices.

**JITTER:**

Jitter is the term used for variance in transmission delays. Jitter is significance for voice, video and data. In LANs, jitter can occur when a packet is delayed because the network is busy.

**PACKET SIZES:**

Large packets result in fewer overheads because a smaller fraction of the packet is used for header information. Optimum networks use 4kB packets or larger. Large packets can't easily be used for voice for example 8-bit samples (at

125usec per sample) would require half a second to fill a 4kB packet. Echo cancellation can only be used with low transmission delays.

**REF:: Handouts Page No. 66**

**Qno.16 While designing the ATM technology why designer of ATM chosen cells over packets which being used widely? Give five reasons to support your answers.(5)**

**Reason:**

1. ATM multiplexed these 53-byte cells instead of packets which reduced worst-case cell contention jitter by a factor of almost 30, reducing the need for echo cancellers.
2. Reduction of jitter (and also end-to-end round-trip delays)
3. Full-length 1500 byte (12000-bit) data packet would take 77.42 to transmit.
4. The design of ATM aimed for a low-jitter network interface
5. ATM broke up all packets, data, and voice streams into 48-byte chunks, adding a 5-byte routing header to each one so that they could be reassembled later

**REF:: Handouts Page No. 66**

**http://en.wikipedia.org/wiki/Asynchronous_Transfer_Mode**

**Qno.17 Suppose star organization using repeater in its network. If frames comes from another network then will the repeater be capable of distinguish between frames from two different networks? Support your answer with a reason also writes down three drawbacks, this organization may face due to use of repeater.**

Answer:-

**Drawbacks**

1. Repeaters provide no method for isolating traffic generated on one cable segment from traffic generated by the other cable segment
2. When network uses a repeater to connect cable segment A to segment B whether or not there is a station in segment B that is the destination of the signal
3. Ethernet standard specifies that any two stations cannot be separated by more than four repeaters.
4. 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.

**REF:: Handouts Page No. 50**

**Question # 1**

-

**What is the difference between LAN and WAN?**

**Answer**

Local area network (LAN)

LAN is small in size covers the area within a room, building or cities.

Wide area network (WAN)

WAN is large in size and covers the area cities, countries and continents.

**Question # 2**

-

**Define the term Jitter.**

**Answer**

The term Jitter is used for variance in transmission delays. Jitter is significance for voice, video and data. Jitter can occur when a packet is delayed because the network is busy.

**Question # 3**

**Give a comparison of the following?**

**Thick Ethernet wiring scheme and Thin Ethernet wiring scheme**.

-

**Answer**

-

This 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.

Thin Ethernet uses thin coax cable that is cheaper and easier to install than thick Ethernet coax. In thin Ethernet wiring scheme transceiver electronics are built into NIC and NIC connect directly to network medium. Coax cable use connector on NIC. Coax runs directly to back of each connected computer by T-connector. The T-connector directly attaches to NIC.

**Question # 4**

-

**How can Switched Virtual Network be established?**

**Answer**

-

Most networks offer dynamic connections that last for a relatively short time. ATM can dynamically establish a switched virtual circuit SVC that allows it as long as necessary and then terminate it. The computer sends a connection request to the switch to which it is attached. Software in the switch finds a path to the destination and sends with the connection request. Each pair of switches in the path communicates to choose a VPI/VCI for their tables. Once the connection is established a message is given back to the originating computer to indicate the SVC is ready.

**Question # 5**

**Describe permanent virtual circuits (PVC).**

**Answer**

ATM can provide the virtual circuits that look like traditional leased digital circuits. The permanent virtual circuits PVC works as long as the customer pays the periodic fee for its use. The forwarding table enter configured the terms used by Telco Provisioning requires two steps.

- To determine a complete path.
- To choose appropriate VPI/VCI for each step in the path and configures each adjacent pair of switches.

**Question # 6**

**What are default routes draw the table.**

**Answer** www.vustudents.ning.com

-

Routing table entries can collapse with a default route. If destination doesn't have in explicit routing table entry and then it use a default route. It is shown in the below table.

**Table__**

| Destination | Next hop | Destination | Next hop | Destination | Next hop | Destination | 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 | | |
| Node 1 | | Node 2 | | Node 3 | | Node 4 | |

**Question # 7**

-

**What is the difference between the physical and logical topologies?**

**Answer**

Every LAN has a topology, or the way that the devices on a network are arranged and how they communicate with each other.

**PHYSICL 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.**

**Question # 8**

**Define Vector-Distance Algorithm.**

**Answer**

-

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 # 9**

**What is the concept of store and forward technology?**

**Answer**

-

**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 # 10**

**How can Switched Virtual Network be established?**

**Answer**

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**SWITCHED VIRTUAL CIRCUITS:**

Most networks offer dynamic connections, which last for a relatively short time.
To handle this, ATM can dynamically establish a switched virtual circuit (SVC), allow it last as long as necessary and then terminate it.
The terminology comes from the Telco's where switching system normally refers to all switching.

**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

**Question # 11**

**How can a bridge know whether to forward frames?**

**Answer**

The bridge builds a list of MAC addresses on either side of the bridge. Therefore, it knows which packets should be forwarded to the other side and which should not. Most bridges are self-learning bridges. As soon as a frame arrives to a bridge, it extracts a source address from its header and automatically adds it in the list for that segment. In this way a bridge builds up address lists.
In the example of a packet that uses a MAC address not in its table it can err on the side of caution by forwarding the packet.

**Question # 12**

**Compare connection oriented and connectionless Service.**

**Answer**

**Connection-Oriented vs. Connectionless Service**

This characteristic specifies whether conversations take place in a more or less structured manner. When using a **connection-oriented** protocol, you incur the overhead of setting up a virtual circuit (a defined communications path) between the sender and receiver, which is maintained until the sender and receiver have completed their entire conversation.

When the conversation is completed, you incur the overhead of tearing down the virtual circuit. Connection-oriented protocols provide guaranteed delivery of messages in the order in which they were sent.

Contrast this with **Connectionless** service, which does not require establishing a session and a virtual circuit. This can be found in the network layer or transport layer, depending on the protocol. You can think of a connectionless protocol as being akin to mailing a post card. You send it and hope that the receiver gets it. Common features of a connectionless service are:

- Packets do not need to arrive in a specific order
- Reassembly of any packet broken into fragments during transmission must be in proper order
- No time is used in creating a session
- No Acknowledgement is required.
- The largest connectionless network in use today is the Internet

**Question # 13**

**Which type of information is obtained from network sniffer and in which mode Network sniffer operates?**

**Answer:**

A network analyzer also called network monitor or a network sniffer is used to examine the performance of or debug a network. It can report statistics such as capacity utilization, distribution of frame size, collision rate or token circulation time

# Most installations still use DIX Ethernet encoding in which there is no LLC/SNAP header in the frame. A network analyzer can tell from the values in the type field (small values are lengths, which mean an LLC/SNAP header is located in the first octets of the data area; large values are types, which mean no LLC/SNAP header is included).

The operation of network analyzer is a computer with a network interface that receives all frames, which is called promiscuous mode. So many desktop computers have interface that can be configured for promiscuous mode. When combined with software computer can examine any frame on LAN. In this way the communication across LAN is guaranteed to be private. Computer receives and displays frames on the LAN.

Network analyzer can be configured to filter and process frames. It can count frames of specific type of size. It displays only frames from or to specific computers.

**Question # 14**

-

**Differentiate b/w Thin Ethernet, Thick Ethernet and Twisted Pair Ethernet?**

**Answer**

-

**Thick Ethernet:**

Thick Ethernet, officially known as 10 Base-5, is the oldest form of Ethernet.

One form of cabling supported by Ethernet is low-loss 50 Ohm coaxial cable as shown in the figure below. This type of cable is 0.5" diameter (usually supplied with a yellow outer PVC coating) and rather inflexible. It has become known in

the communications industry as "Thick Ethernet". The official name for this cable is 10 Baseband5 (10B5), indicating that it is specified for baseband communications at 10 Mbps over distances up to 500m.

**Thin Ethernet:**

Thin Ethernet, officially called 10 Base-2, is a less expensive version of 10 Base-5 (Thick Ethernet) technologies. It uses a lighter and thinner coaxial cable and dispenses with the external transceivers used with 10 Base-5.

10 Base-2 uses an RG-58A/U coaxial cable and is wired in a bus topology. Each device on the network is connected to the bus through a BNC "T" adapter, and each end of the bus must have a 50 Ohm terminator attached. Each node on the bus must be a minimum of 0.5 meters (1.5 feet) apart, and the overall length of the bus must be less than 185 meters (606 feet).

**Twisted Pair Ethernet:**

Twisted Pair Ethernet (10baseT), sometime also called "UTP" from "Unshielded Twisted Pair", is based on using a cable similar to phone-wiring. The cable is connected via RJ-45 connectors to the network card installed in the PC.

-

**Question # 15**

**LIST SOME CHARACTERISTICS OF A CLIENT?**

**Answer**

-

The characteristics of a client are explained below:

"Client is an arbitrary application program.

"It becomes client temporarily.

"It can also perform other computations.

"It is invoked directly by the user.

"It runs locally on the user's computer.

"It actively initiates contact with a server.

"It contacts one server at a time.

**Question # 16**

**Explain TCP Segment Format?**

**Answer**www.vustudents.ning.com

-

TCP uses single format for all messages. TCP uses the term segment to refer to a message. Each message sent from TCP on one machine to TCP on another machine uses this format including data and acknowledgement.

**Question # 17**

**What is IPv6 Address Notation?**

**Answer**

-

128-bit addresses unwidely in dotted decimal; requires 16 numbers:

105.220.136.100.255.255.255.255.0.0.18.128.140.10.255.255

69DC: 8864: FFFF: FFFF: 0:1280:8C0A: FFFF
Zero-compression – series of zeroes indicated by two colons
FF0C: 0:0:0:0:0:0:B1
FF0C::B1
IPv6 address with 96 leading zeros is interpreted to hold an IPv4 address

**Question # 18**

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**How much data can present on original Ethernet segment at one time? To find out compute the delay-throughput product. The original Ethernet operate at 10 mega bits per second, and a segment was limited to 500 meters. Assume the signals propagate down the cable at 66 percent of the speed of light?**

**Answer**

Speed of light = 299 792 458 m / s

Bandwidth=10
Delay = 66 percent of speed of light =197863022 m/s

Bandwidth Delay product= 247328777500

**Question # 19**

**Explain these terms**
**Star topology, Ring topology, Frame?**

**Answer**

**FRAME:**
A frame or hardware frame denotes a packet of a specific format on a specific hardware technology
**RING TOPOLOGY**

In this topology of network the computers are connected to each other in closed loop.

**STAR TOPOLOGY**

In this topology, all computers are attached to a central point, which is sometimes called the Hub

**Question # 20**

**Explain the term bridge and its functions**

**Answer**

A bridge keeps a list for each segment that consists of physical addresses of the computer attached to that segment. In this way a bridge knows on which segment a destination computer is attached.
Most bridges are self learning bridges. As soon as a frame arrives to a bridge, it extracts a source address from its header and automatically adds it in the list for that segment. In this way a bridge builds up address lists.
A bridge is a hardware device also used to connect two LAN segments to extend a LAN.

FRAME FILTERING

The most important task a bridge performs is frame filtering. If both the source and destination are on the same segment, it does not forward the frame to the other segment. A frame is forwarded to the other segment, if it is destined to that segment.

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**Question # 21**

**Explain NIC and Computer Processing?**

**Answer**

-

**NIC AND CPU PRCESSING:**

NIC contains sufficient hardware to process data independent of system CPU. In which some NICs contain separate microprocessor. In addition to this it also include analog circuitry interface to system bus, buffering and processing

**Question # 22**

**What is Parity Checking? Explain**

**Answer**

-

Parity checking

To detect the error there are different schemes for which parity checking is also common used, in parity checking, parity refers to the number of bits set to 1 in the data item. A parity bit is an extra bit transmitted with data item chose to give the resulting bit even or odd parity

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-

**Question # 23**

**What do you know about Djikstra's algorithm?**

**Answer**

**Djikstra's algorithm**

Djikstra's algorithm can accommodate weights on edges in graph. The shortest path is then the path with lowest total weight.

**Question # 24**

**What are the uses of Repeater?**

**Answer**

-

Repeater is a networking device

A repeater is used to increase the signal strength. It amplifies the weakening signal received from one segment and then retransmits onto another segment

## Mcq's of cs610 In one Mega file

**Question No: 1 ( Marks: 1 ) - Please choose one**

---

A

---------- relies on the hardware manufacturer to assign a unique physical address to each network interface.

► **Static addressing scheme**

► Configurable addressing scheme

► Dynamic addressing scheme

► None of the given

**Question No: 2 ( Marks: 1 ) - Please choose one**

---

An interface for thin Ethernet must have an _____ connector , and must generate signals according to the_____ specification.

► **RJ-45, 10 Base T**

► RJ-45, 10 Base 5

► BNC, 10 Base 2

► BNC, 10 Base T

**Question No: 3 ( Marks: 1 ) - Please choose one**

---

A system with redundant bridges might have a problem with_____ in the system.

► **Loop**

► Filters

► Spanning Trees

► All given choices

**Question No: 4 ( Marks: 1 ) - Please choose one**

A Bridge can _____

► Filter a frame

► Forward a frame

► Extend a LAN

► **Do all the above**

**Question No: 5 ( Marks: 1 ) - Please choose one**

_____ is used for typical data applications (where the data rate may be unknown and bursty) and allows use of whatever bandwidth is available at a given time.

► Constant Bit Rate (CBR) service

► Variable Bit Rate (VBR) service

**► Available Bit Rate (ABR) service**

► None of the given

**Question No: 6 ( Marks: 1 ) - Please choose one**

---

**A**TM assigns each VC a _____ identifier that is divided two parts to produce a hierarchy.

► 21-bit

► 22-bit

► 23-bit

**► 24-bit**

**Question No: 7 ( Marks: 1 ) - Please choose one**

---

____ of TCP/IP layering model, corresponds to basic network hardware.

**► Physical Layer**

► Network Interface Layer

► Internet Layer

► Transport Layer

**Question No: 8 ( Marks: 1 ) - Please choose one**

_____ places the boundary between the second and third octets

**► Class A**

► Class B

► Class C

► Class D

**Question No: 9 ( Marks: 1 ) - Please choose one**

---

UDP and TCP are both_____ layer protocols

► Physical

► Data link

► Network

► **Transport**

**Question No: 10 ( Marks: 1 ) - Please choose one**

---

Connection-oriented service, Point-to-point, Complete reliability, Full-duplex communication, Stream interface, Reliable connection startup and Graceful connection shutdown are the services provided by_____

► IP

► None of the given

► **TCP**

► UDP

**Question No: 11 ( Marks: 1 ) - Please choose one**

_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.

► Physical Layer

► Network Interface Layer

► Internet Layer

► **Transport Layer**

**Question No: 12 ( Marks: 1 ) - Please choose one**

---

____identifies which application program on receiving computer should receive the data

► Logical address

► Source port

► **Destination Port**

► None of the given

**Question No: 13 ( Marks: 1 ) - Please choose one**

_____ identifies the application program that sent the data.

► Destination Port

► **Source port**

► Logical address

► None of the given

**Question No: 14 ( Marks: 1 ) - Please choose one**

---

Which of the following are interior routing protocols?

► **RIP**

► OSPF

► BGP

► RIP and OSPF

**Question No: 15 ( Marks: 1 ) - Please choose one**

---

The Border Gateway Protocol (BGP) uses_____ for all communication

► UDP

► **TCP**

► Both UDP and TCP

► None of the given

**Question No: 16 ( Marks: 1 ) - Please choose one**

_____measures distance in network hops, where each network between the source and destination counts as single hop.

► BGP

► OSPF

► **RIP**

► None of the given

**Question No: 17 ( Marks: 1 ) - Please choose one**

---

OSPF is based on--------

► Distance vector routing

► **Link state routing**

► Path vector routing

► Distance vector routing and Link state routing

**Question No: 18 ( Marks: 1 ) - Please choose one**

---

_____ performs local multicast and uses IP-in-IP encapsulation to send multicast datagrams from one site on the Internet to another.

► **Distance Vector Multicast Routing Protocol (DVMRP)**

► Core Based Trees (CBT)

► Protocol Independent Multicast_ *Sparse Mode (PIM-SM)*

► Protocol Independent Multicast _ *Dense Mode (PIM-DM)*

**Question No: 19 ( Marks: 1 ) - Please choose one**

The length of time required to send a variable length packet is variable and does not require a complicated interrupt scheme to detect completion of transmission.

► True

► **False**

**Question No: 20 ( Marks: 1 ) - Please choose one**

---

NEXT HEADER field in the base header defines type of header and it appears at end of fixed-size base header.

► **True**

► False

**Question No: 21 ( Marks: 1 ) - Please choose one**

---

Although message exchange can be used to bind addresses, sending a request for each binding is hopelessly inefficient.

► **True**

► False

**Question No: 22 ( Marks: 1 ) - Please choose one**

Address mask defines how many bits of address are in suffix?

► True

**► False**

**Question No: 23 ( Marks: 1 ) - Please choose one**

A computer attached to a given network can only communicate with other computers attached to the same network. Is this a problem with multiple networks?

**► True**

► False

**Question No: 24 ( Marks: 1 ) - Please choose one**

---

In the 1970s large organizations began to acquire multiple networks. Each network in the organization formed island. Employees needed to choose a computer appropriate for each task. So they needed multiple screens, keyboards and computers.

► False

**► True**

**Question No: 25 ( Marks: 1 ) - Please choose one**

---

The term self-identifying is used for Classful IP addresses because the class of the address can be computed from the address_____.

**► itself**

► prefix

► suffix

► mask

**Question No: 26 ( Marks: 1 ) - Please choose one**

---

In which method of Address Resolution Protocol the protocol address independent of hardware address

Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

► T, C

► D

► C

► **T, D**

**Question No: 27 ( Marks: 1 ) - Please choose one**

---

In which method of Address Resolution Protocol the protocol address is determined by hardware address? Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

► T

► D

► **C**

► T, C

**Question No: 28 ( Marks: 1 ) - Please choose one**

---

Reconstruction of original datagram is called reassembly.

► **True**

► False

**Question No: 29 ( Marks: 1 ) - Please choose one**

---

A computer needs a complete stack of protocols to run either a client or a server.

► **True**

► False

**Question No: 30 ( Marks: 1 ) - Please choose one**

---

TCP uses _____ mechanism to control the flow of data.

► door

► **window**

► acknowledgment

► retransmission

**Question No:31 (Marks: 1) - Please choose one**

➢ _____representation of links that connect nodes is called as physical topology.
► geometrical

► logical
► physical

**Question No: 32 ( Marks: 1 ) - Please choose one**

The internet model consists of _____ layers.

► three
► two
► five
► seven

**Question No: 33 ( Marks: 1 ) - Please choose one**

Encryption and encoding are the same terms.

True
► False

**Question No: 34 ( Marks: 1 ) - Please choose one**

he amplitude of a digital signal depends upon the_____ to represent a bit.

► phase
► voltage
► wavelength

**Question No: 35 ( Marks: 1 ) - Please choose one**

The inversion of the level at 1 bit is called as _____

►NRZ-L
► NRZ-I
► RZ

**Question No: 36 ( Marks: 1 ) - Please choose one**

Modulation of an analog signal can be accomplished through changing the _____ of the carrier signal.

► amplitude
► frequency
► phase
► all of the given

**Question No: 37 ( Marks: 1 ) - Please choose one**

If FCC regulations are followed, the carrier frequencies of adjacent AM radio stations are _____ apart.

► 5 KHz
► 10 KHz
► 200 KHz
► 530 KHz

**Question No: 38 ( Marks: 1 ) - Please choose one**

Category 5 UTP cable is used for data transmission of upto_____.

► 100 Mbps
► 200 Mbps
► 250 Mbps
► 400 Mbps

**Question No: 39 ( Marks: 1 ) - Please choose one**

The RG number gives us information about _____.

► Twisted pairs
► Coaxial cables
► Optical fibers
► all of the given

**Question No: 40 ( Marks: 1 ) - Please choose one**
The inner core of an optical fiber is _____ in composition.
► Glass plastic
► Copper
► Bimetallic
► Liquid
**Question No: 41 ( Marks: 1 ) - Please choose one**
All of popular Fiber optic connectors are _____ shaped.
► Conical
► Barrel
► Circular
► Rectangular
**Question No: 42 ( Marks: 1 ) - Please choose one**
The VLF and LF bands use _____ propagation for communications.
► Ground
► Sky
► Line of sight
► Space
**Question No: 43 ( Marks: 1 ) - Please choose one**
Multiplexing is the set of techniques that allows simultaneous TX of multiple signals across _____ data link
► Single
► Multi
► Single and Multi
► none of the given
**Question No: 44 ( Marks: 1 ) - Please choose one**
A portion of the path that carries TX b/w a given pair of devices is known as _____.
► Node
► Bridge
► Channel
► Gateway
**Question No: 45 ( Marks: 1 ) - Please choose one**
Which error detection method involves polynomials?
► Checksum
► Two-dimensional parity check
► CRC
► Simple parity check
**Question No: 46 ( Marks: 1 ) - Please choose one**
If the ASCII character G is sent and the character D is received, what type of error is this?
► Single-bit
► Multiple-bit
► Burst
► Recoverable
**Question No: 47 ( Marks: 1 ) - Please choose one**
Which error detection method involves the use of parity bits?
► Simple parity check & two dimensional parity check
► CRC
► Two-dimensional parity check

► Simple parity check

**Question No: 48 ( Marks: 1 ) - Please choose one**

Which error detection method can detect a single-bit error?

► Simple parity check
► Two-dimensional parity check
► CRC
► All of the given

**Question No: 49 ( Marks: 1 ) - Please choose one**

The Hamming code is a method of _____

► Error detection
► Error correction
► Error ecapsulation
► Error detection & Error encapsulation

**Quetion No: 50 ( Marks: 1 ) - Please choose one**

Sliding window requires that data frames be transmitted _____

► Sequentially
► Frequently
► Synchronously
► Asynchronously

**Question No: 51 ( Marks: 1 ) - Please choose one**

In selective-reject ARQ, only the specific damaged or lost frame is_____.

► Retransmitted
► Forwarded
► Selected
► Rejected

**Question No: 52 ( Marks: 1 ) - Please choose one**

Which of the following sublyer, resolves the contention for the shared media

► MAC
► LLC
►Physical

**Question No: 53 ( Marks: 1 ) - Please choose one**

The PDU has no flag fields, no CRC, and no station address

► TRUE
► FALSE

**Question No: 54 ( Marks: 1 ) - Please choose one**

IEEE divides the base band category into _____ standards.

► 5
► 4
► 3
► 6

**Question No: 55 ( Marks: 1 ) - Please choose one**

Like 10 Base 5, 10 Base 2 is a _____ topology LAN

► Ring
► Mesh
► Star
► Bus

**Question No: 56 ( Marks: 1 ) - Please choose one**

Check sum method is used for _____ layers.

► Physical
► Application
► Transport
► Datalink

**Question No: 57 ( Marks: 1 ) - Please choose one**

Repeater works on _____ layer.

► Data Link
► Physical
► Network
► Application

**Question No: 58 ( Marks: 1 ) - Please choose one**

Trunks are transmission media such as _____ that handle the telephone to the nearest end office.

► Satellite links
► Twisted-pair & Fiber-optic
► Twisted-pair
► Fiber-optic

**Question No: 59 ( Marks: 1 ) - Please choose one**

Which of the following _____ uses a series of filters to decompose multiplexed signal into its constituent signals.

MUX
► DEMUX
► Switch
► Bridge

**Question No: 60 ( Marks: 1 ) - Please choose one**

In Fast Ethernet, data rate can be increased by _____ collisions.

► Increasing
► Decreasing
► Keeping Constant
► None of the given

**Question No: 61 ( Marks: 1 ) - Please choose one**

Computer networks are often called ---------- because they use packet technology.

► Ethernet

► Switch networks

► Packet networks

**► None of the given**

**Question No: 62 ( Marks: 1 ) - Please choose one**

A network uses a ------arranges for computers to be connected in a closed loop.

► Star Topology

**► Ring Topology**

► Bus Topology

► None of the given

In a ring topology each computer is connected to other thorough a ring

**Question No: 63 ( Marks: 1 ) - Please choose one**

An ----------method, the network hardware designers specify how type information is included in the frame and the value use to identify various frame types.

**► Explicit frame type**

► Ideal frame type

► Implicit frame type

► None of the given

EXPLICIT FRAME TYPE:

In this type the identifying value is included with frame describes types of

included data.

**Question No: 64 ( Marks: 1 ) - Please choose one**

An interface for thin Ethernet must have an _____ connector , and must generate signals according to the_____ specification.

**► RJ-45, 10 Base T (reference not available)**

► RJ-45, 10 Base 5

► BNC, 10 Base 2

► BNC, 10 Base T

**Question No: 65 ( Marks: 1 ) - Please choose one**

A Bridge forwards or filters a frame by comparing the information in its address table to the frame's_____

► Layer 2 source address

► Source node's physical address

**► Layer 2 destination address**

► Layer 3 destination address

**Question No: 66 ( Marks: 1 ) - Please choose one**

Most WAN systems include a mechanism that can be used to eliminate the common case of duplication routing is called_____

► Hierarchal address

**► Default route**

► Shortest path

► None of the given

Most WAN systems include a mechanism that can be used to eliminate the common case of duplication routing is called Default route. The mechanism allows a single entry in a forwarding table to replace a long list of entries that have the same next hope value

**Question No: 67 ( Marks: 1 ) - Please choose one**

_____ of TCP/IP layering model, corresponds to basic network hardware.

**► Physical Layer**

► Network Interface Layer

► Internet Layer

► Transport Layer

LAYER 1:

Corresponds to basic network hardware layer in OSI

**Question No: 68 ( Marks: 1 ) - Please choose one**

_____ Protocols of TCP/IP layering model specify how to ensure reliable transfer.

► Physical Layer

► Network Interface Layer

► Internet Layer

► Transport Layer

The Internet layer in the TCP/IP reference model is responsible for transferring data between the source and destination computers

**Question No: 69 ( Marks: 1 ) - Please choose one**

_____is called an end-to-end protocol because it provide a connection directly from an application on one computer to an application on a remote computer.

► IP

**► UDP**

► TCP

► None of the given

UDP has the following characteristics.

It is an end-to-end protocol. It provides application-to-application communication.

**Question No: 70 ( Marks: 1 ) - Please choose one**

_____ uses distance vector approach to define routing

► BGP

► OSPF

**► RIP**

► None of the given

**DISTANCE-VECTOR ROUTING:**

• It is very simple to implement.

• Packet switch updates its own routing table first.

• It is used in RIP.

**Question No: 71 ( Marks: 1 ) - Please choose one**

_____ is ideal in a situation where the group is small and all members are attached to contiguous Local Area Networks.

**► Flood-and -Prune**

► Configuration-and -Tunneling

► Core-Based Discovery

► None of the give006E

**FLOOD-AND-PRUNE:**

Flood-and-prune is ideal in a situation where the group is small and all members

Are attached to contiguous Local Area Networks.

**Question No: 72 ( Marks: 1 ) - Please choose one**

Router that decrements TTL to __ sends ICMP time exceeded message, with router's address as source address

► 3

► 2

► 1

► **0**

Router that decrements TTL to 0 sends ICMP time exceeded message, with router's

address as source address

**Question No: 73 ( Marks: 1 ) - Please choose one**

Protocol addresses are abstractions provided by _____.

► Hardware

► **Software**

► Operating system

► Internet

PROTOCOL ADDRESSES AND PACKET DELIVERY:

Protocol addresses are abstractions provided by software

**Question No: 74 ( Marks: 1 ) - Please choose one**

Although message exchange can be used to bind addresses, sending a request for each binding is hopelessly inefficient.

► **True**

► False

CASHING ARP RESPONSES:

Although message exchange can be used to bind addresses, sending a request for

each binding is hopelessly inefficient

**Question No: 75 ( Marks: 1 ) - Please choose one**

ARP is almost always used to bind a ___-bit IP address to a ___-bit Ethernet address.

► **32, 48**

► 24, 32

► 32, 64

► 32, 128

ARP is almost always used to bind a 32-bit IP address to a 48-bit Ethernet address

**Question No: 76 ( Marks: 1 ) - Please choose one**

In the 1970s large organizations began to acquire multiple networks. Each network in the organization formed island. Employees needed to choose a computer appropriate for each task. So they needed multiple screens, keyboards and computers.

► False

**► True**

In the 1970s large organizations began to acquire multiple networks. Each

Network in the organization formed island. Employees needed to choose a

computer appropriate for each task. So they needed multiple screens, keyboards

And computers.

**Question No: 77 ( Marks: 1 ) - Please choose one**

In which method of Address Resolution Protocol the protocol address is determined by hardware address?

Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

| **Features** | **Types of Resolution** |
|---|---|
| Use full with any hardware | T |
| Address change affects all hosts | T |
| Protocol address is determined by hardware address | C |

► T

► D

**► C**

► T, C

**Question No: 78 ( Marks: 1 ) - Please choose one**

The general form of an IP datagram is with a header followed by data. The header contains information that controls where and how the datagram is to be sent.

► **True**

► False

Header contains all information needed to deliver datagram to the destination

Computer. It contains:

• Destination address

• Source address

• Identifier

• Other delivery information

**Question No: 79 ( Marks: 1 ) - Please choose one**

To save traffic, an EGP does not summarize routing information from the autonomous system before passing it to another autonomous system.

► True

► False

"It provides routing among autonomous systems (EGP).

**Question No: 80 ( Marks: 1 ) - Please choose one**

Which of the following is a correct representation of the IPv6?

► **105.220.136.100.255.255.255.255.0.0.18.128.140.10.255.255**

► 105.220.136.100.255.255.255.256.0.0.18.128.140.10.255.255

► 105.220.136.100.255.255.255.255.0.0.18.128.140.10.255.255.256

► 105.220.136.100.255.255.255.255.0.0.18.128.140.10.255
128-bit addresses unwieldy in dotted decimal; requires 16 numbers:

105.220.136.100.255.255.255.255.0.0.18.128.140.10.255.255

**Question No: 81 ( Marks: 1 ) - Please choose one**

The number of connections needed for N computer in direct point to point communication is equal to:

► **$(N^2 – N)/2$**

► N(N- 1)

► $N^2$

► None of the given

**For 'n' computers connections in direct point to point communication = (n^2 –n)/2.**

**Question No: 82 ( Marks: 1 ) - Please choose one**

When an application---------- data, it makes a copy of the data available to all other computers on the network.

► Broadcasting

► Multicasting

► Unicasting

**► None of the given (not sure)**

**Question No: 83 ( Marks: 1 ) - Please choose one**

Ethernet uses a ------ bit static addressing scheme in which each device is assigned a unique address by the manufacturer.

► 64

**► 48**

► 32

► 8

**Ethernet uses a 48-bit static addressing scheme**

**Question No: 84 ( Marks: 1 ) - Please choose one**

A system with redundant bridges might have a problem with_____ in the system.

**► Loop**

► Filters

► Spanning Trees

► All given choices

**Question No: 85 ( Marks: 1 ) - Please choose one**

The product of delay and throughput measures the _____ of data that can be present on the network.

► Area

► Volume

► Length

► None of the given

*It is computed as delay time multiplied by effective throughput. It measures amount of data that can be present in the network*

**Question No: 86 ( Marks: 1 ) - Please choose one**

Connectionless service, Message-Oriented protocol, best effort delivery service, arbitrary interaction and operating system independent are the characteristics of _____

► TCP

► **UDP**

► IP

► None of the given

**UDP has the following characteristics.**

**• It is an end-to-end protocol. It provides application-to-application communication.**

**• It provides connectionless service.**

**• It is a Message-Oriented protocol.**

**• It uses best-effort delivery service.**

**• It follows arbitrary interaction**.

**• It is operating system independent**

**Question No: 87 ( Marks: 1 ) - Please choose one**

Connection-oriented service, Point-to-point, Complete reliability, Full-duplex communication, Stream interface, Reliable connection startup and Graceful connection shutdown are the services provided by_____

► None of the given

► **TCP**

► UDP

► IP

**SERVICE PROVIDED BY TCP:**

**Following are the services provided by TCP:**

**• Connection-oriented service**

**• Point-to-point**

**• Complete reliability**

**• Full-duplex communication**

**• Stream interface**

**• Reliable connection startup**

**• Graceful connection shutdown**

**Question No: 88 ( Marks: 1 ) - Please choose one**

The process of using a routing table to select a next hop for a given datagram is called_____

► Encapsulation

► Reassembling

► **Routing or forwarding**

► None of the given

**Question No: 89 ( Marks: 1 ) - Please choose one**

_____ uses distance vector approach to define routing

► BGP

► OSPF

► **RIP**

► None of the given

**DISTANCE-VECTOR ROUTING:**

**• It is very simple to implement.**

**• Packet switch updates its own routing table first.**

**• It is used in RIP.**

**Question No: 90 ( Marks: 1 ) - Please choose one**

A multicast routing scheme in which the protocol software builds a delivery tree from a central point is called_____

► Distance Vector Multicast Routing Protocol (DVMRP)

► **Core Based Trees (CBT)**

► Protocol Independent Multicast_ *Sparse Mode (PIM-SM)*

► Protocol Independent Multicast _ *Dense Mode (PIM-DM)*

**CORE BASED TREES (CBT):**
**A multicast routing scheme in which the protocol software builds a delivery tree**

**from a central point.**

**Question No: 91 ( Marks: 1 ) - Please choose one**

One repeater _____, two repeaters _____ the maximum cable length limitation.

► doubles, cancel

► **doubles, triple**

► square roots, cude roots

► and, triple

**One repeater doubles, two repeaters triple the maximum cable length limitation**.

**Question No: 92 ( Marks: 1 ) - Please choose one**

Whenever it handles a packet, IP software needs to separate the destination address into a _____ and _____.

► postfix, Infix

► non of these

► Infix, prefix

► **prefix, suffix**

**Whenever it handles a packet, IP software needs to separate the destination address into a prefix and suffix**

**Question No: 93 ( Marks: 1 ) - Please choose one**

Although message exchange can be used to bind addresses, sending a request for each binding is hopelessly inefficient.

► **True**

► False

**CASHING ARP RESPONSES:**

**Although message exchange can be used to bind addresses, sending a request for**

**each binding is hopelessly inefficient**.

**Question No: 94 ( Marks: 1 ) - Please choose one**

ARP is almost always used to bind a ___-bit IP address to a ___-bit Ethernet address.

► **32, 48**

► 24, 32

► 32, 64

► 32, 128

**ARP is almost always used to bind a 32-bit IP address**

**to a 48-bit Ethernet address**

**Question No: 95 ( Marks: 1 ) - Please choose one**

End-to-end delivery service is connection oriented.

► True

► **False**

**End-to-end delivery service is connection less**

**Question No: 96 ( Marks: 1 ) - Please choose one**

A single networking technology is best for all needs.

► True

► **False**

**There is no single networking technology that is best for all needs**

**Question No: 97 ( Marks: 1 ) - Please choose one**

In the 1970s large organizations began to acquire multiple networks. Each network in the organization formed island. Employees needed to choose a computer appropriate for each task. So they needed multiple screens, keyboards and computers.

► False

► **True**

**In the 1970s large organizations began to acquire multiple networks. Each network in the organization formed island. Employees needed to choose a computer appropriate for each task. So they needed multiple screens, keyboards and computers**.

**Question No: 98 ( Marks: 1 ) - Please choose one**

Which method of Address Resolution Protocol is useful with any hardware?

**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

| **Features** | **Types of Resolution** |
|---|---|
| Use full with any hardware | T |
| Address change affects all hosts | T |
| Protocol address is determined by hardware address | C |

► **T**

► C

► D

► C, D

**Question No: 99 (Marks:1 ) - Please choose one**

In which method of Address Resolution Protocol the protocol address is determined by hardware address?

**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

| **Features** | **Types of Resolution** |
|---|---|
| Use full with any hardware | T |
| Address change affects all hosts | T |
| Protocol address is determined by hardware address | C |

► T

► D

► **C**

► T, C

**Question No: 100 ( Marks: 1 ) - Please choose one**

We use the term _____ to refer to a measure of the path that routing software use when choosing a route.

► routing path

► **routing metric**

► routing

switching

**We use the termrouting metric to refer to a measure of the path that routing software use when choosing a route**

**Question No : 101 (Marks: 1) - Please choose one**

In Direct point to point communication adding the Nth computer requires---------- new connections.
► None of the given
► N2
► **N-1**
► (N2 –N)/2
**disadvantage In Direct point to point communication is that adding a new computer to the network requires N-1 new connections .(P# 23)**
**Question No: 102 ( Marks: 1 ) - Please choose one**
In Point-to-Point topology there are two topologies.

► Tree and Ring
► Star and Ring
► **Star and Tree**
► None of the given
POINT-TO-POINT:

In *Point-to-Point* topology there are two topologies.

1) STAR topology

2) TREE topology

**Question No: 103 ( Marks: 1 ) - Please choose one**

In ----------, network occupies the smaller area like a room a floor or a building

► **LAN**

► WAN

► MAN

► None of the given

**In LAN network occupies the smaller area like a room a floor or a building.(P# 4)**

**Question No: 104 ( Marks: 1 ) - Please choose one**

Hardware that calculates a CRC uses two simple components.

► AND unit and XOR unit

► **Shift register and XOR unit**

► Shift register and AND unit

► None of the given

CRC uses just two hardware components:

Shift register

Exclusive OR ( XOR unit ) .*(P# 20)*

**Question No: 105 ( Marks: 1 ) - Please choose one**

CRC can detect more errors than a simple checksum.

► true

► false

**Question No: 106 ( Marks: 1 ) - Please choose one**

The Gigabit Ethernet hardware operates at a rate of --------

► 10 Mbps

► 100 Mbps

► **1000 Mbps**

► None of the given

**Gigabit Ethernet that operates at 1 Gbps (1000 Mbps) over fiber optics and twisted pair Ethernet cables.**

**Question No: 107 ( Marks: 1 ) - Please choose one**

Formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.

► 10 Base 2

► 10 Base 5

► **10 Base T**

► None of the given

*10BASE-T:*

**This is another standard of wiring scheme. It is commonly called 10Base-T, Twisted Pair or TP Ethernet. (P# 43)**

**Question No: 108 ( Marks: 1 ) - Please choose one**

An interface for thin Ethernet must have an _____ connector , and must generate signals according to the_____ specification.

► **RJ-45, 10 Base T**

► RJ-45, 10 Base 5

► BNC, 10 Base 2

► BNC, 10 Base T

**Question No: 109 ( Marks: 1 ) - Please choose one**
A system with redundant bridges might have a problem with_____ in the system.
► **Loop**
► Filters
► Spanning Trees
► All given choices
**Question No: 110 ( Marks: 1 ) - Please choose one**
_____ computes shortest paths in a graph by using weights on edges as a measure of distance.
► Greedy algorithm
► Distance vector algorithm
► **Dijksta's algorithm**
► Non of the given
**Djikstra'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).**
**Question No: 111 ( Marks: 1 ) - Please choose one**
Basic LAN technologies such as Ethernet, Token Ring, and FDDI use a _____.
► Connectionless service paradigm
► Connection-oriented service paradigm
► **Both Connectionless and Connection-oriented service paradigm**
► None of the given
**Question No: 112 ( Marks: 1 ) - Please choose one**
_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.
► Physical Layer
► Network Interface Layer
► Internet Layer
► **Transport Layer**
**LAYER 4: ensure reliable transfer layer 4 in TCP layering model is transport layer**.
**Question No: 113 ( Marks: 1 ) - Please choose one**
An Internet Address (IP address) is a unique _____ binary number assigned to a host and used for all communication with host
► 48-bit
► **32-bit**
► 24-bit
► None of the given
**An Internet address (IP address) is a unique 32-bit binary number assigned to a**

**host and used for all communication with the host**
**Question No: 114 ( Marks: 1 ) - Please choose one**
The address _____ identifies the physical network to which the computer is attached, while the _____ identifies an individual computer on that network.
► prefix , suffix
► **suffix , prefix**
► suffix , suffix
► None of the given
PREFIX:

It identifies the physical network to which the computers are attached.

SUFFIX:

It identifies an individual computer on the network.

**Question No: 115 ( Marks: 1 ) - Please choose one**

_____ places the boundary between the first and second octets

► **Class A**
► Class B
► Class C
► Class D

Class A places the boundary between the first and second octets. Class B places the boundary between the second and third octets, and class C places the boundary between the third and fourth octets.

**Question No: 116 ( Marks: 1 ) - Please choose one**

_____ places the boundary between the third and fourth octets.

► Class A
► Class B
► **Class C**
► Class D

Class A places the boundary between the first and second octets. Class B places the boundary between the second and third octets, and class C places the boundary between the third and fourth octets.

**Question No: 117 ( Marks: 1 ) - Please choose one**

_____ field of header indicates whether a datagram is a fragment or a complete datagram.

► FLAGS
► FLAGMENT OFFSET
► IDENTIFICATION
► **None of the given**

**FRAGMENTATION:**

IP uses fragmentation i.e. datagram's can be split into pieces to fit in network with small MTU. Each fragment is an independent datagram. It includes all header fields. Bit in header indicates that the datagram is a fragment

**Question No: 118 (Marks: 1) - Please choose one**

_____ provides connectionless service.

► TCP
► **UDP**
► IP
► none of the given

**UDP has the following characteristics.**

• It is an end-to-end protocol. It provides application-to-application communication.

• It provides connectionless service.

• It is a Message-Oriented protocol.

• It uses best-effort delivery service.

• It follows arbitrary interaction.

• It is operating system independent

**Question No: 119 ( Marks: 1 ) - Please choose one**

UDP and TCP are both_____ layer protocols

► Physical

► Data link

► Network

► **Transport**

**Question No: 120 ( Marks: 1 ) - Please choose one**

Connection-oriented service, Point-to-point, Complete reliability, Full-duplex communication, Stream interface, Reliable connection startup and Graceful connection shutdown are the services provided by_____

► IP

► None of the given

► **TCP**

► UDP

SERVICE PROVIDED BY TCP:

Following are the services provided by TCP:

• Connection-oriented service

• Point-to-point

• Complete reliability

• Full-duplex communication

• Stream interface

• Reliable connection startup

• Graceful connection shutdown

**Question No: 121 (Marks: 1) - Please choose one**

_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.

► Physical Layer

►Network Interface Layer

► Internet Layer

► **Transport Layer**

**LAYER 4: ensure reliable transfer layer 4 in TCP layering model is transport layer**

**Question No: 122 ( Marks: 1 ) - Please choose one**

_____identifies which application program on receiving computer should receive the data

► Logical address

► Source port

► **Destination Port**

► None of the given

**FieldDestinationPort identifies which application program on receiving computer should receive the data. While field source port identifies the application programs that sent the data. (Reference from E-books)**

**Question No: 123 (Marks: 1) - Please choose one**

_____ identifies the application program that sent the data.

► Destination Port
► **Source port**
► Logical address
► none of the given
**Field Destination Port identifies which application program on receiving computer should receive the data. While field source port identifies the application programs that sent the data. (Reference from E-books)**
**Question No: 124 (Marks: 1) - Please choose one**
The Border Gateway Protocol (BGP) uses_____ for all communication
► UDP
► **TCP**
► Both UDP and TCP
► none of the given

**BORDER GATEWAY PROTOCOL:**

It is most popular Exterior Gateway Protocol in Internet. It has following characteristics:

"It provides routing among autonomous systems (EGP).

"It provides policies to control routes advertised.

"It uses reliable transport (TCP).
**Question No: 125 (Marks: 1) - Please choose one**
Which of the following protocols allows the sender and receiver to enforce polices.
► RIP
► OSPF
► BGP
► RIP and OSPF
**Question No: 126 (Marks: 1) - Please choose one**
_____ uses distance vector approach to define routing
► BGP
► OSPF
► **RIP**
► None of the given
**ROUTING INFORMATION PROTOCOL (RIP):**

It has the following characteristics:

**"It is used for routing within an autonomous system (IGP).**

"Hop Count Metric: RIP measures distance in network hops, where each network

Between the source and destination counts as a single hop.

"It uses UDP for all message transmissions.

"RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows

Delivery via multicast.

"It can be used to advertise default route propagation. An organization can use RIP to

Install a default route in each router.

"It uses distance vector algorithm.

**Question No: 127 (Marks: 1) - Please choose one**

ICMP message transport is acted upon by getting ICMP encrypted in IP.

► **True**

► False

**ICMP message transport is acted upon by getting ICMP encapsulated in IP (P# 117)**

**Question No: 128 ( Marks: 1 ) - Please choose one**

Protocol addresses are abstractions provided by _____.

► hardware

► **software**

► operating system

► internet

Protocol addresses are abstractions provided by software

**Question No: 129 ( Marks: 1 ) - Please choose one**

These packets serve same purpose on _____ as frames on _____

► Intranet, LAN

► Internet, WAN

► Intranet, WAN

► **Internet, LAN**

**VIRTUAL PACKETS:**

**These packets serve same purpose in Internet as frames on LAN**

**Question No: 130 (Marks: 1) - Please choose one**

Address mask defines how many bits of address are in suffix?

► True

► **False**

Address mask defines how many bits of address are in prefix. Prefix defines how much of address used to identify network.

**Question No: 131 (Marks: 1) - Please choose one**

A single networking technology is best for all needs.

► True

► **False**

**There is no single networking technology that is best for all needs**

**Question No: 132 ( Marks: 1 ) - Please choose one**

A computer attached to a given network can only communicate with other computers attached to the same network. Is this a problem with multiple networks?

► **True**

► False

the chief problems with multiple networks are as follows:

• A computer attached to a given network can only communicate with other

Computers attached to the same network.

**Question No: 133 (Marks: 1) - Please choose one**

the term self-identifying is used for Classful IP addresses because the class of the address can be computed from the address_____.

► **itself**
► prefix
► suffix
► mask

**Classful IP addresses are self-identifying because the class of the address can be computed from the address itself**

**Question No: 134 (Marks: 1) - Please choose** one

Find the class of the address.
10100111 11011011 10001011 01101111

► A
► **B**
► E
► C

**Reference table handouts P # 87**

**Question No: 135 (Marks: 1) - Please choose one**

Find the class of the address:
11110011 10011011 11111011 00001111

► A
► C
► **E**
► B

**Reference table handouts P # 87**

**Question No: 136 ( Marks: 1 ) - Please choose one**

In which method of Address Resolution Protocol the protocol address is determined by hardware address?
Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

► T
► D
► **C**
► T, C

**Reference table handouts P # 97**

**Question No: 137 (Marks: 1) - Please choose one**

Which method of Address Resolution Protocol requires hardware broadcast?
Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

► **D**
► T
► C
► T, D

**Reference table handouts P # 97**

**Question No: 138 ( Marks: 1 ) - Please choose one**

Which method of Address Resolution Protocol resolution with minimum delay?
Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

► T, D
► c
► T

► **T, C**

**Reference table handouts P # 97**

**Question No: 139 ( Marks: 1 ) - Please choose one**

In which method of Address Resolution Protocol the implementation is more difficult?
Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

► T, C
► T
► C
► **D**

**Reference table handouts P # 97**

**Question No: 140 (Marks: 1) - Please choose one**

on of the design goals for unicast route propagation is _____.

► Consistency
► inconsistency
► **stability**
► dynamic addressing

on of the design goals for unicast route propagation is stability—continual changes in route are undesirable because they lead to higher jitter and datagram arriving out of order. Thus, once a unicast routing protocol finds a shortest path, it usually retains the route until a failure makes the path unusable. (Reference from E-book)

**Question No: 141 (Marks: 1) - Please choose one**

Propagation multicast routing information differs dramatically from unicast route propagation?

► **True**
► False

***Propagating multicast routing information differs dramatically from unicast route propagation.*** **The difference arises because internet multicast allows dynamic group membership and autonomous senders**

**Question No: 142 (Marks: 1) - Please choose one**

The IP multicast abstraction allows an application running on an arbitrary computer to leave a multicast group at any time. While _____ application on a computer remain a member of a group.

► One or more
► only one
► no
► many

**Question No: 143 (Marks: 1) - Please choose one**

To save traffic, an EGP does not summarize routing information from the autonomous system before passing it to another autonomous system.

► True
► **False**

**to save traffic, an EGP summarize routing information from the autonomous system before passing it to another autonomous system. More important an EGP implements policy constraint that allows a system manager to determine exactly what information is released outside the organization. (Reference from E-book)**

**Question No: 144 (Marks: 1) - Please choose one**

In IPv6 the type of address used for collection of computers with same prefix. Are known as_____.

► Anycast
► Unicast

► Multicast
► **none of the given**
**Following are special types of addresses, IPv6 uses***:*

Unicast: It is used for single destination computer.

Multicast: It is used for multiple destinations; possibly not at same site.

Cluster: This type of address is used for collection of computers with same prefix,

Datagram is delivered to one out of cluster.
**Question No: 145 (Marks: 1) - Please choose one**
Special types of addresses in IPv6 used for multiple destinations; possibly not at same site. Are known as_____.
► Unicast
► Anycast
► **Multicast**
► none of the given
**Following are special types of addresses, IPv6 uses:**

**Unicast:** It is used for single destination computer.

**Multicast:** It is used for multiple destinations; possibly not at same site.

**Cluster:** This type of address is used for collection of computers with same prefix,

datagram is delivered to one out of cluster.
**Question No: 146 ( Marks: 1 ) - Please choose one**
UDP offers application programs a Message-Oriented Interface, applications can depend on protocol to preserve data boundaries.
► **True**
► False
**UDP offers application programs a Message-Oriented Interface. It does not divide messages into packets for transmission and does not combine messages for delivery.**

**ADVANTAGES:**

**• Applications can depend on protocol to preserve data boundaries.**
**Question No: 147 ( Marks: 1 ) - Please choose one**
Reliability is the responsibility of the _____ layer
► Network
► Datalink
► **Transport**
► Application
**Reliability is the responsibility of the Transport layer**
**Question No: 148 ( Marks: 1 ) - Please choose one**
TCP uses _____ mechanism to control the flow of data.
► door
► **window**
► acknowledgment

► retransmission

**TCP uses window mechanism to control the flow of data.**

**Question No: 149 ( Marks: 1 ) - Please choose one**

The time for acknowledgement to arrival of packet depends on.

► **Distance to destination and Current traffic conditions**

► Current traffic conditions

► Distance to destination

► non of these

The time for acknowledgement to arrive depends on:

• Distance to destination

• Current traffic conditions

**Question No: 150 ( Marks: 1 ) - Please choose one**

FDDI can transmits data at a rate of ----------

► **100 million bits per second**

► 10 million bits per second

► 1000 million bits per second

► None of the given

**FDDI: 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**.

**Question No:151 (Marks:1) - Please choose one**

When an application---------- data, it makes a copy of the data available to all other computers on the network.

► **Broadcasting**

► Multicasting

► Unicasting

► None of the given

**Question No:152 (Marks:1) - Please choose one**

Ethernet uses a ------ bit static addressing scheme in which each device is assigned a unique address by the manufacturer.

► 64

► **48**

► 32

► 8

**Question No: 153 (Marks: 1) - Please choose one**

The product of delay and throughput measures the _____ of data that can be present on the network.

► Area

► **Volume**

► Length

► None of the given

**Question No: 154 (Marks: 1) - Please choose one**

Connectionless service, Message-Oriented protocol, best effort delivery service, arbitrary interaction and operating system independent are the characteristics of _____

► TCP
► **UDP**
► IP
► None of the given

**Question No: 155 (Marks: 1) - Please choose one**

_____ uses distance vector approach to define routing

► BGP
► OSPF
► **RIP**
► None of the given

**Question No: 156 (Marks: 1) - Please choose one**

Whenever it handles a packet, IP software needs to separate the destination address into a _____ and _____.

► postfix, Infix
► non of these
► Infix, prefix
► **prefix, suffix**

**Question No: 157 (Marks: 1) - Please choose one**

ARP is almost always used to bind a ___-bit IP address to a ___-bit Ethernet address.

► **32, 48**
► 24, 32
► 32, 64
► 32, 128

**Question No: 158 (Marks: 1) - Please choose one**

Which method of Address Resolution Protocol is useful with any hardware?

*Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?*

► T
► **C**
► D
► C, D

**Question No: 159 (Marks: 1) - Please choose one**

In which method of Address Resolution Protocol the protocol address is determined by hardware address?

**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange***?*

► T
► D
► **C**
► T, C

**Question No: 160 (Marks: 1) - Please choose one**

We use the term _____ to refer to a measure of the path that routing software use when choosing a route.

► routing path

► **routing metric**

► routing

► switching

**Question No: 161 (Marks: 1) - Please choose one**

A network uses a ------arranges for computers to be connected in a closed loop.

► Star Topology

► **Ring Topology**

► Bus Topology

► None of the given

**Question No: 162 (Marks: 1) - Please choose one**

An interface for thin Ethernet must have an _____ connector , and must generate signals according to the_____ specification.

► **RJ-45, 10 Base T**

► RJ-45, 10 Base 5

► BNC, 10 Base 2

► BNC, 10 Base T

**Question No: 163 (Marks: 1) - Please choose one**

_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.

► Physical Layer

► Network Interface Layer

► Internet Layer

► **Transport Layer**

**Question No: 164 (Marks: 1) - Please choose one**

_____ uses distance vector approach to define routing

► BGP

► OSPF

► **RIP**

► None of the given

# CS610 Solved MCQS 100% Correct

_____ of TCP/IP layering model, corresponds to basic network hardware.

- · **Physical Layer**

- · Network Interface Layer
- · Internet Layer
- · Transport Layer

_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.

- · Physical Layer
- · Network Interface Layer
- · Internet Layer
- · **Transport Layer**

_____is called an end-to-end protocol because it provide a connection directly from an application on one computer to an application on a remote computer.

- · IP
- · **UDP**
- · TCP
- · None of the given

_____ uses distance vector approach to define routing

- · BGP
- · OSPF
- · **RIP**
- · None of the given

_____ is ideal in a situation where the group is small and all members are attached to contiguous Local Area Networks.

- · **Flood-and -Prune**
- · Configuration-and -Tunneling
- · Core-Based Discovery
- · None of the given

Router that decrements TTL to ___ sends ICMP time exceeded message, with router s address as source address

- · 3
- · 2

- · 1
- · **0**

Protocol addresses are abstractions provided by _____.

- · hardware
- · **software**
- ·
- · internet

Although message exchange can be used to bind addresses, sending a request for each binding is hopelessly inefficient.

- · **True**
- · False

ARP is almost always used to bind a ____-bit IP address to a ____-bit Ethernet address.

- · **32, 48**
- · 24, 32
- · 32, 64
- · 32, 128

In the 1970s large organizations began to acquire multiple networks. Each network in the organization formed island. Employees needed to choose a computer appropriate for each task. So they needed multiple screens, keyboards and computers.

- · False
- · **True**

In which method of Address Resolution Protocol the protocol address is determined by hardware address? Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

- · T
- · D
- · **C**
- · T, C

Which method of Address Resolution Protocol is useful with any hardware?

Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

- · **T**
- · C
- · D
- · C, D

In which method of Address Resolution Protocol the implimentation is more difficult?

Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

- · T, C
- · T
- · C
- · **D**

Which method of Address Resolution Protocol resolution with minimum delay?

Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?

- · T, D
- · c
- · T
- · **T, C**

The general form of an IP datagram is with a header followed by data. The header contains information that controls where and how the datagram is to be sent.

- · **True**
- · False

To save traffic, an EGP does not summerize routing information from the autonomous system before passing it to another autonomous system.

- · True
- · **False**

---------- was especially concerned about the lack of high powered computers.

- · IEEE

- · APRA (wrong spelling)
- · EIA
- · **None**

Missing eot indicates sending computer crashed in frame format.

- · **True**
- · False

The ----------term refers to the general concept of a small block of data.

- · **Packets**
- · Data
- · Frame
- · None of given

CRC can detect more errors than a simple checksum.

- · **True**
- · False

The network that uses a ----------, usually consist of a single long cable to which computer attach.

- · Star topology
- · **Bus topology**
- · Ring topology
- · None of the given

LAN that use ATM technology have a ----------

- · Star topology
- · Bus topology
- · Ring topology
- · **None of the given**

A bridge uses ---------- to determine which computer is connected to which segment, and uses the ---------- to determine whether to forward a copy of frame.

- .
- .
- .
- .

---------- has a jitter zero

- · Virtual Private Network
- · **Isochronous Network**
- · Asynchronous Network
- · None of the given

The network with Throughput T and Delay D has a total ---------- bits in transit at a time.

- · D + T
- · D – T
- · **D X T**
- · D / T

One repeater ----------, two repeaters ---------- the maximum cable length limitation.

- · **Double, triple**
- · Double, 4 time
- · half, triple
- · Double, half

End-to-end delivery service is connection oriented.

- · True
- · **False**

A single networking technology is best for all needs.

- · True
- · **False**

Twice NAT allows a site to run servers.

- · **True**

- · False

_____ device is used for multicasting.

- · Hub
- · Switch
- · **Router**
- · none of the given

_____ does not depend on any particular unicast routing protocol.

- · PIM-DM
- · **PIM-SM**
- · PIM-AM
- · none of the given

A routing table contains_____

- · The destination network ID
- · The hop count to reach the network
- · **The router ID of the next hop**
- · All of the given

_____ can be used to propagate information about remote networks.

- · **Dynamic routing**
- · Static routing
- · Address resolution
- · None of the given

_____ protocol is designed to use within an organization.

- · OSPF
- · MEOSPF
- · **MOSPF**
- · none of the given

NAPT stands for _____

- · Network Address and Protocol Translation
- · **Network Address and Port Translation**
- · Network Address and Packet Translation
- · None of the given

In dynamic routing, the routing table is initialized when system boots.

- · **True**
- · False

OSPF includes _____ address mask with each address.

- · 30Bit
- · **32Bit**
- · 34Bit
- · none of the given

Twice NAT fails if an application uses the IP addresses instead of Domain Name.

- · **True**
- · False

_____ uses window mechanism to control the flow of data.

- · IP
- · UDP
- · **TCP**
- · none of the given

TCP uses _____ mechanism to control the flow of data.

- · door
- · **window**
- · acknowledgment
- · retransmission

IGPs stand for _____

- · Internal Gateway Protocols

- · **Interior Gateway Protocols**
- · Intermediate Gateway Protocols
- · None of the given

_____ protocol uses distance vector algorithm.

- · IGP
- · BGP
- · **RIP**
- · none of the given

_____measures distance in network hops, where each network between the source and destination counts as single hop.

- · BGP
- · OSPF
- · **RIP**
- · Non of these

Network Address Translation (NAT) requires device to perform packet translation.

- · **True**
- · False

We use the term _____ to refer to a measure of the path that routing software use when choosing a route.

- · routing path
- · **routing metric**
- · routing
- · switching

Part of the 3-way handshake used to create a connection, requires each end to generate a random _____ sequence number.

- · **32 bit**
- · 16 bit

- · 8 bit
- · 64 bit

Reconstruction of original datagram is called reassembly.

- · **True**
- · False

Reliability is the responsibility of the _____ layer.

- · **Transport**
- · Network
- · Physical
- · Internet

_____ is ideal in a situation where the group is small and all members are attached to contiguous Local Area Networks.

- · **Flood-and -Prune**
- · Configuration-and -Tunneling
- · Core-Based Discovery
- · None of the given

In Direct point to point communication adding the Nth computer requires---------- new connections.

- · None of the given
- · $N^2$
- · **N-1**
- · $(N^2 - N)/2$

The number of connections needed for N computer in direct point to point communication is equal to:

- · **$(N^2-N)/2$**
- · N(N-1)
- · $N^2$
- · None of the given

Hardware that calculates a CRC uses two simple components.

- · AND unit and XOR unit
- · **Shift register and XOR unit**
- · Shift register and AND unit
- · None of the given

The Gigabit Ethernet hardware operates at a rate of --------

- · 10 Mbps
- · 100 Mbps
- · **1000 Mbps**
- · None of the given

_____ computes shortest paths in a graph by using weights on edges as a measure of distance.

- · Greedy algorithm
- · Distance vector algorithm
- · **Dijksta's algorithm**
- · Non of the given

Basic LAN technologies such as Ethernet, Token Ring, and FDDI use a _____.

- · **Connectionless service paradigm**
- · Connection-oriented service paradigm
- · Both Connectionless and Connection-oriented service paradigm
- · None of the given

An Internet Address (IP address) is a unique _____ binary number assigned to a host and used for all communication with host

- · 48-bit
- · **32-bit**
- · 24-bit
- · None of the given

The address _____ identifies the physical network to which the computer is attached, while the _____ identifies an individual computer on that network.

- · **prefix , suffix**
- · suffix , prefix
- · suffix , suffix
- · None of the given

_____ places the boundary between the first and second octets

- · **Class A**
- · Class B
- · Class C
- · Class D

_____ places the boundary between the second and third octets.

- · Class A
- · **Class B**
- · Class C
- · Class D

_____ places the boundary between the third and fourth octets.

- · Class A
- · Class B
- · **Class C**
- · Class D

_____ Field of header indicates whether a datagram is a fragment or a complete datagram.

- · **FLAGS**
- · FLAGMENT OFFSET
- · IDENTIFICATION
- · None of the given

_____ provides connectionless service.

- · TCP
- · **UDP**

- · IP
- · None of the given

UDP and TCP are both_____ layer protocols

- · Physical
- · Data link
- · Network
- · **Transport**

_____identifies which application program on receiving computer should receive the data

Logical address

- · Source port
- · **Source port**
- · Destination Port
- · None of the given

_____ identifies the application program that sent the data.

- · Destination Port
- · **Source port**
- · Logical address
- · None of the given

The Border Gateway Protocol (BGP) uses_____ for all communication

- · UDP
- · **TCP**
- · Both UDP and TCP
- · None of the given

Which of the following protocols allows the sender and receiver to enforce polices.

- · RIP
- · OSPF

- · **BGP**
- · RIP and OSPF

ICMP message transport is acted upon by getting ICMP encrypted in IP.

- · True
- · **False**

These ICMP message transport is acted upon _____ as frames on _____

- · Intranet, LAN
- · Internet, WAN
- · Intranet, WAN
- · **Internet, LAN**

Address mask defines how many bits of address are in suffix?

- · True
- · **False**

A computer attached to a given network can only communicate with other computers attached to the same network. Is this a problem with multiple networks?

- · **True**
- · False

The term self-identifying is used for Classful IP addresses because the class of the address can be computed from the address_____.

- · **itself**
- · prefix
- · suffix
- · mask

Find the class of the address:

11110011 10011011 11111011 00001111

- · A
- · C
- · **E**

- · B

*There are three standard implementations to improve computational efficiency: Hashing, Direct Indexing and Indirect*

*Indexing*

**False**

*A _____ address-binding table is used for each physical network.*

New

Similar

**Separate**

Old

*_____ layer Provides reliable delivery of datagram.*

*Network*

**Transport**

*Datalink*

*none of the given*

*Due to revolutionalization of IP-V's the speed has increased from _____*

**512 to 1 GB**

*_____ encapsulates IP datagram as data area in hardware frame.*

**Network Interface Layer**

Datalink Layer

Network Layer

none of the given

*_____ Field of header indicates whether a datagram is a fragment or a complete datagram.*

**FRAGMENT OFFSET**

*as the Internet grew, the original Classful addressing scheme became a limitation. The IP address space was being exhausted because all networks had to choose one of four possible sizes.*

**False**

*As the Internet grew, the original Classful addressing scheme became a limitation. The IP address space*

was being exhausted because all networks had to choose one of _____possible sizes.

**Three**

Header contains all information needed to deliver datagram to the destination computer. But which one of the following is not included:

**Rectifier**

_____ contains all information needed to deliver datagram to the destination.

**Header**

one of the parameters, which motivated IP for change is address space. The _____ address space allows for over a million networks. But most networks are class C and too small for many organizations.

**32-bit**

Class A mask is 255.0.0.0 which is used for _____

**Sub netting**

Postfix defines how much of address used to identify network.

**False**

_____field is used to identify a specific path through the network

**FLOW LABEL**

_____ is a technique used to Limit datagram size to small MTU of any network

**Fragmentation**

Hashing is the transformation of a string of characters into a usually shorter fixed-length value or a key that represents the original string.

**True**

In _____, the protocol address assigned to a computer is chosen carefully so that computer's

*hardware address can be computed from the protocol address using basic Boolean and arithmetic operations.*

**Closed-form Computation**

*Routers use _____ to forward datagram along prearranged path.*

**Flow label**

*Mapping between a protocol address and a hardware address is called Address Resolution.*

**True**

*Preliminary version of IP was called _____.*

**IP - Next Generation (IPng)**

*_____ Source is responsible for fragmentation.*

**IPV6**

*End to End delivery Service of IP datagram is _____*

**Connectionless**

*Every hardware technology specification includes the definition of the maximum size of the frame data area, which is called the _____ Transmission Unit.*

**Maximum**

*IPV6 addresses are _____ bits.*

**128**

*MTU Stands for _____*

**Maximum transmission unit**

*_____ shows senders preference for low latency, high Reliability.*

**SERVICE TYPE**

*NEXT HEADER field in the base header defines type of header it appears at the end of fixed-size base header.*

**True**

*There are two standard implementations to improve computational efficiency: Hashing and direct indexing*

**True**

*A datagram cannot be larger than _____ of a network over which it is sent.*

**IP header**

*The protocol address of the next hop must be _____ to an equivalent hardware address before a packet can be sent.*

**Translated**

The physical addressing in a WAN is similar as in LAN in the way.....

The data is transmitted in packets equivalent to frames.

Each packet has a format with header.

The packet header includes destination and source addresses.

**All of the above**

In Asynchronous Transfer Mode VPI/VCI fields identify the cells----------

Which one of the following is a method for computing routing table information?

Manual entry

Boot time routing

**Static routing**

None of the above

All destinations on same switch have same

Router

Information

**Next hop**

None of the above

Which of the following statement is wrong regarding ATM?

It is a single technology for voice, video and data

It has low jitter and high capacity.

It uses fixed size, small cells, and 48 octet's data

**None of the above**

Which one of the following is the responsibility of Djikstra' algorithm?

**To compute the shortest path between two nodes**

To extract next hop information from path information

To insert next hop information into routing table

All of the above

Which of the following statement is true regarding Link-state routing?

Network topology is separated from route computation.

Each switch builds its own routing tables.

Link-state routing uses Djikstra's algorithm.

**All of the above**

Jitter is significance for ----------

Voice

Video

Data

**All of above**

The routing table contains information about the ……immediately around it.

Topology of the network

**Destination**

Both of the above

None of the above

(1) There are three types of Hubs that exist. Which of the following options correctly describes these three?

a. Passive, dormant, special
b. Active , dormant , passive
c. Passive, Active, Turbo
d. **Passive, Active, Intelligent**

2. A number of different factors determine the cost of a Hub. Which of the following is among these factors?

a. **Speed rating**
b. Durability
c. Brand
d. Class

Which of the following network topologies among the list below is incorrect?

a. Star
b. **Internet**

c. Ring
d. Bus

Which of the following is not a feature of Base band Coaxial Cable?

a. Bi-directional
b. Few Kilometer range
c. **Proton based**
d. Ethernet(basis for 802.3) at 10 Mbps

Which of the following is not a function of a repeater?

Uses Jumper Settings

Transmits data in both directions

No Buffering

**Joins two (2) segments of cables**

Which level of the TCP/IP reference model routes data/information across a network channel?

Application layer

Data Link Layer

Transport Layer

**Network Layer**

The function of a modem is to convert signals. Identify the correct signals it converts.

**Analogue to Digital**

Analogue to Baud rate

Baud rate to Analogue

Digital to Binary

Which of the following is not a LAN – Architecture?.

(a) Protocol architecture

**Media access control**

Logical Protocol

Logical Link Control

Identify the statement which best describes TCP and UDP.

**TCP is a connection oriented Protocol whiles UDP is a datagram service**

TCP is a protocol for the Network Layer of the OSI

UDP and TCP could be used interchangeably

TCP is an advanced protocol whiles UDP is a single protocol

Which of the following characteristics best describes a frame?

**Data link layer(Header, Trailer, Data)**

Network Layer(Header, Trailer, Data)

Transport Layer(Header, Trailer, Data)

Physical Layer(Header, Trailer, Data)

What does the terminology ISDN mean?

Internal Digital Services Network

Integrated Systems Digital Network

Integrated Services Digital Naming System

**Integrated Services Digital Network**

What does the terminology ATM mean?

Automatic transfer mode

Automatic translation mode

**Asynchronous transfer mode**

Asynchronous transformation mode

A simple Architecture for File Transfer is made up of :

File transfer application; Communications service module; Network access module

File transfer application; transport layer; Network access module

Network access layer; Transport layer; Application layer

**Application layer; Network layer; Session layer**

Which of the following statements is true about standards?

Standards create additional cost

**Standards help individuals' users to increase effectiveness**

Standards allow products from multiple vendors to communicate

Standards cannot freeze technology

Which of the following statement is true about FLOW CONTROL?

**Flow control is a function performed by a receiving entity to limit the amount or rate of data on a network.**

Flow control adjusts the weights on a network

Flow control is a function performed by the MODEM

Flow control is an advanced form of network management

Identify the most suitable description for ERROR CONTROL?

**Error control is an activity that manages deadlock.**

Error control is an advanced form of parity bit

Error control is a sub-function of a modem and Hub

Error control is needed to guard against loss or damage of data

What is the full meaning of the terminology SMTP?

State Mail Transfer Protocol

Simple Mail Tailor Protocol

Simple Management Transfer Protocol

**Simple Mail Transfer Protocol**

Several Computers connected together is called:

Client-server

Client

**Computer network**

Hub

In which of the following networks does the client submit a task to the server, then the server executes and returns the result for the requesting client station?

(a) Peer-to-Peer

(b) Client-Server

Server-Based

**All of the above**

In which network topology are all workstations connected in cascade form?

Star

Ring

**Mesh**

Bus

Which network topology uses a Hub?

**Star**

Bus

Mesh

Ring

Which of the following topologies is used for Ethernet?

Star

Bus

Ring

**All of the above**

Computers on a university campus are connected by a/an:

MAN

WAN

**LAN**

INTERNET

The primary function of the network layer is:

Error detection

Set up a session

**Routing**

Encryption

Which of the following standards apply to logical link control?

IEEE 802.3

**IEEE 802.2**

IEEE 802.5

IEEE 802.4

Which organization defines standards for telecommunication?

ITU

**IEEE**

EIA

ISO

Which of the following statements is a true description of fibre Optic Cable?

Fiber optic cables transfer data in a mesh

**Fiber optic cables transfer data in light form**

Fiber optic cables are similar to coaxial cables

Non of the above

Which of the following is not true of switching technology?

Packet Switching

Link Switching

**Packets are switched in the form of datagram**

Circuit switching techniques

Which of the following is a true description of Multi-stage Switching?

More simple control

**Increased number of crossed points**

More complex control

Reduced Reliability

Flooding in networks and data communication has certain properties. Which of the options below is a property of flooding?

All possible routes are tried

**All paths are loaded**

All nodes are linked

Can not be used to set up virtual circuit

Identify any of the following statements which truly describe a virtual circuit.

(a) Packets are forwarded more quickly and no routing decisions

(b**) More reliable in functionality**

(c) Call set up phases are present

Packets are centralized at random and more routing decisions are made

Which of the following operating systems software is most suitable for wide area network?

DOS

OS/2

WINDOWS NT

**NOVELL NETWARE**

Binding is an important function in establishing communication between a Client and a Server. Which of the following statements truly describes binding in protocols?

(a) **Binding protocols to network interfaces specifies that the selected protocol can be sent and received through the selected LAN interface card.**

(b) Binding is a function of the Network Operating Systems Software

Binding is a configuration process in mail server management.

Binding serves as a security layer in operating systems.

(36) In configuring Windows NT 4.0 for Network Access. There are seven (7) areas to be addressed. Identify from the options below the area that should not be addressed.

Protocols

Bindings

IP Address

**Autoexec Management**

Which of the following is not a network adapter?

3 com LP III

3 com Ether link III ISA

3 com Ether link II Adapter

**3 com 3C508 ISA 16 BIT**

Which of the following statement is true about an IP address?

**IP address is based on your computer network card**

IP address is issued by a computer vendor

IP address is a Transport Protocol

IP address is not used on the internet

Which of the following is not associated with the session layer?

Control of dialogue between applications

Dialogue discipline

**Data compression**

Synchronization

## CS 610 Solved (Correct) MCQS (References are given in Blue Font)

The protocol address of the next hop must be _____ to an equivalent hardware address before a packet can be sent.

Encrypted

Decrypted

**Translated**

Non of these

A _____ address-binding table is used for each physical network.

New

Similar

**Separate**

Old

UDP provides connection-oriented service.

True

False

TCP provides connection oriented reliable data streaming service, whereas UDP provides connection-less unreliable messaging service.

The UDP stands for_____.

Universal Datagram Protocol

**User Datagram Protocol**

United Datagram Protocol

None of the given

In 3-way handshake TCP requires to generate a random _____ sequence number.

30 bit

**32 bit**

34 bit

none of the given

TCP stands for _____

Transport control protocol

**Transmission control protocol**

Terminal control protocol

None of the given

As the Internet grew, the original Classful addressing scheme became a limitation. The IP address space was being exhausted because all networks had to choose one of three possible sizes.

Select correct option:

**True**

False

Question # 4 of 20 ( Start time: 06:44:07 PM )

Total M a r k s: 1

Twice NAT allows a site to run servers.

Select correct option:

**True**

False

Preliminary version of IP was called _____.

Select correct option:

IP - New Generation (IPng)

**IP - Next Generation (IPng)**

IP - Net Generation (IPng)

None of the given

As the Internet grew, the original Classful addressing scheme became a limitation. The IP address space was being exhausted because all networks had to choose one of two possible sizes.

Select correct option:

True

**False**

_____ uses window mechanism to control the flow of data.

Select correct option:

IP

UDP

**TCP**

none of the given

TCP uses window mechanism to control the flow of data.

The Internet service providers coordinate with the Internet assigned number authority to obtain their network numbers.

Select correct option:

**True**

False

Which protocol is used to test different tools.

Select correct option:

**ICMP**

IGMP

TCP/IP

none of the given

USING ICMP TO TEST REACHABILITY:

ICMP can also be used to test different tools. An Internet host A, is reachable from another host B, if datagram's can be delivered from A to B. Ping program tests reach ability. It sends datagram from B to A, that echoes back to B. it uses ICMP echo request and echo reply messages. Internet layer includes code to reply to incoming ICMP

echo request messages.

_____ identifies the application program that sent the data.

Select correct option:

Destination Port

**Source port**

Logical address

None of the given

The Source can configure outgoing datagram's to avoid _____

Select correct option:

Segmentation

Defragmentation

**Fragmentation**

None of the given

Fragmentation should be avoided. Source can configure outgoing datagrams to avoid fragmentation. Source determines path MTU- smallest network MTU on path from source to destination.

Question # 18 of 20 ( Start time: 06:57:12 PM )

Total M a r k s: 1

The time for acknowledgement to arrive depends on _____

Select correct option:

Distance to destination

Current traffic conditions

**Both a and b**

None of the given

The time for acknowledgement to arrive depends on:

- Distance to destination
- Current traffic conditions

which is not the type of error messages defined by ICMP.

Select correct option:

Source quench

Time exceeded

Destination unreachable

**None of the given**

ERROR MESSAGES:

These are as follows:

• Source quench

• Time exceeded

• Destination unreachable

• Redirect

• Fragmentation required

_____ is used to attach two autonomous systems.
Select correct option:

BGP
IGP
**EGP**
none of the given

**Question # 2 of 20**

Due to revolutionalization of IP-V6 the speed has increased from _____
Select correct option:

56kbps to 512kbps
512kbps to 1gbps
**56kbps to 1gbps**
none of the given

Scale is also dramatically changed. Size from a few tens to a few tens of millions

Of computers has been revolutionized. Speed has increased from 56Kbps to 1Gbps. Also

There is an increased frame size in hardware

**Question # 3 of 20**

Whenever it handles a packet, IP software needs to separate the destination address into a prefix.
Select correct option:
True
**False**
COMPUTING THE CLASS OF AN ADDRESS:

Whenever it handles a packet, IP software needs to separate the destination

Address into a prefix and suffix.

**Question # 4 of 20**

TTL stands for _____
Select correct option:

Time to Learn
Time to Leave
**Time to Live**
none of the given

**Question # 5 of 20**

IGPs stand for _____
Select correct option:

Internal Gateway Protocols
**Interior Gateway Protocols**
Intermediate Gateway Protocols
None of the given

**Question # 6 of 20**

_____identifies which application program on receiving computer should receive the data
Select correct option:

Logical address
Source port
**Destination Port**
None of the given
Field Destination Port identifies which application program on receiving computer should receive the data. While field source port identifies the application programs that sent the data.

**Question # 7 of 20**

_____encapsulates IP datagram as data area in hardware frame.
Select correct option:

**Network Interface Layer**
Datalink Layer

Network Layer
None of the given
The network interface layer encapsulates an entire datagram in the data area of a hardware frame

vuzs.net

**Question # 8 of 20**

Class A mask is 255.0.0.0 which is used for _____
Select correct option:
Unicasting
Multicasting
**Subnetting**
All of the given
class A mask is 255.0.0.0 which is used for subnetting.

**Question # 9 of 20**

NAT is not useful at a residence with Cable Modem or DSL connectivity.
Select correct option:
True
**False**

**Question # 10 of 20**

Autonomous System chooses a routing protocol to exchange routing information which is passed before being summarized to another group.
Select correct option:
**True**
False

**Question # 11 of 20**

_____ layer Provides reliable delivery of datagram.
Select correct option:
Network
**Transport**
Datalink
none of the given

Transport layer provides reliable delivery. Network layer – IP – can detect and

report errors without actually fixing them. It focuses on datagram delivery. Application

layer is not interested in differentiating among delivery problems at intermediate routers

**Question # 12 of 20**

The process of using a routing table to select a next hop for a given datagram is called_____.
Select correct option:
Encapsulation
Reassembling
**Routing or forwarding**
None of the given
The process of using a routing table to select a next hop for a given datagram is called routing or forwarding.

**Question # 13 of 20**

The process of learning the path MTU is known as path MTU discovery.
Select correct option:
**True**
False
The process of learning the path MTU is known as path MTU discovery.

**Question # 14 of 20**

As the Internet grew, the original Classful addressing scheme became a limitation. The IP address space was being exhausted because all networks had to choose one of _____ possible sizes.
Select correct option:
**three**
two
four
five

**Three**

As the Internet grew, the original Classful addressing scheme became a limitation.

The IP address space was being exhausted because all networks had to choose one of

Three possible sizes. Many addresses were unused.

Two new mechanisms were invented to overcome the limitations, which are as

Follows:

• Subnet addressing

• Classless addressing

**Question # 15 of 20**

End to End delivery Service of IP datagram is _____
Select correct option:

Connection oriented
Connectionless
both a and b
none of the given

**Question # 16 of 20**

EGP stands for _____
Select correct option:

Extension Gateway Protocol
**Exterior Gateway Protocol**
Explicit Gateway Protocol
none of the given

**Question # 17 of 20**

Hashing is the transformation of a string of characters into a usually shorter fixed-length value or a key that represents the original string.
Select correct option:

**True**
False
Hashing is the transformation of a string of characters into a usually shorter fixed-length value or a key that represents the original string. Hashing is used to index and retrieve items in a database because it is faster to find the item using the shorter hashed key than to find it using the original value. It is also used in many encryption algorithms.

**Question # 18 of 20**
Although the ARP message format is sufficiently general to allow arbitrary protocol and hardware addresses. ARP is almost always used to bind a 32-bit IP address to a ____ Ethernet address.
Select correct option:

16-bit
**48-bit**
64-bit
128-bit

Although the ARP message format is sufficiently general to allow arbitrary protocol and hardware addresses. ARP is almost always used to bind a 32-bit IP address to a 48-bit Ethernet address

**Question # 19 of 20**
Reliability is not the responsibility of the Transport layer.
Select correct option:

True
**False**

Reliability is the responsibility of the Transport layer. In TCP/IP, TCP provides reliable transport service. Most Internet applications use TCP as no other protocol has proved to work better.

**Question # 20 of 20**

IPV6 address with _____ leading zeros is interpreted to hold an IPV4 address.
Select correct option:
http://vustudents.ning.com//
**96**
100
120
none of the given

IPv6 address with 96 leading zeros is interpreted to hold an IPv4 address**Question # 1 of 20**

NAT software does not allow a PC to connect with the Internet and act as a NAT device at the same time.
Select correct option:
True
**False**

**Question # 2 of 20**
TCP uses the term segment to refer to a _____.
Select correct option:

packet
**message**
both (a) and (b)
None of the given

both a and b?

TCP uses single format for all messages. TCP uses the term segment to refer to a message. Each message sent from TCP on one machine to TCP on another machine uses this format including data and acknowledgement.

**Question # 3 of 20**
The Universal Datagram Protocol is a message-oriented protocol.
Select correct option:

**True**
False

UDP has the following characteristics.

• It is an end-to-end protocol. It provides application-to-application communication.

• It provides connectionless service.

• It is a Message-Oriented protocol.

• It uses best-effort delivery service.

• It follows arbitrary interaction.

• It is operating system independent

**Question # 4 of 20**
_____field tells the receiver how to order fragments within a given datagram.
Select correct option:

FLAGS
FLAGMENT OFFSET
IDENTIFICATION
**None of the given**

The FRAGMENT OFFSET field tells a receiver how to order fragments within a given datagram

**Question # 5 of 20**
IP datagram can contains _____ octets.
Select correct option:

0-65,535
**1-65,535**
1-65,536
none of the given

Datagrams can have different sizes i.e.

Header area is usually fixed (20 octets) but can have options. Data area can contain

between 1 octet and 65.535 octets (216-1).

Usually, data area is much larger than header.

**Question # 6 of 20**
The amount of buffer space available at any time is called the window.
Select correct option:
**True**
False

**Question # 7 of 20**
_____ Source is responsible for fragmentation.
Select correct option:

IPV4
**IPV6**

IPv6 source (not intermediate routers) is responsible for fragmentation. Routers simply drop datagrams larger than network MTU (Maximum Transmission Unit). So source must fragment datagram to reach destination.

**Question # 8 of 20**
Routers use _____ to forward datagrams along prearranged path.
Select correct option:

Traffic class
**Flow label**
Destination address
none of the given

Routers use flow label to forward datagrams along prearranged path

**Question # 9 of 20**
_____ protocol uses three way handshake to begin a connection.
Select correct option:

UDP
**TCP**
IP
none of the given

**Question # 10 of 20**
Typical internet routing uses uses a combination of two metrics_____.
Select correct option:

routing metrics
administrative cost and routing metrics
hop cost
**administrative cost and hop count**

**Question # 14 of 20**
Network Address and Port Translation (NAPT) is by far the most popular form of _____
Select correct option:

Network Address Transmission
**Network Address Translation**
Network Address Transformation
None of the given

**Question # 15 of 20**
The routers within an autonomous system use a _____ to exchange routing information.
Select correct option:

**Interior Gateway protocols(IGPs)**
Exterior Gateway protocol (EGPs)
Both Interior Gateway protocols(IGPs) and Exterior Gateway protocol (EGPs)
None of the given

It is used among routers within autonomous system. The destinations lie within IGP.

**Question # 17 of 20**
Interior Gateway Protocols (IGPs) and Exterior Gateway Protocols (EGPs) two broad classes of Internet Routing Protocol.
Select correct option:

**True**
False

**Question # 18 of 20**
The Network Layer Protocol ICMP stands for_____
Select correct option:

Instant Control Message Protocol
**Internet Control Message Protocol**
Initial Control Message Protocol
None of the given

**Question # 19 of 20**
The Current version of IP-Version 4 is _____ old

Select correct option:

18 years
**20 years**
22 years
none of given

TCP is a connectionless and reliable transport protocol.
Select correct option:

True
**False**

**ATM header is about the_____of the cell.**

Select correct option:

15%

**10% page 66**

20%

5%

**Jitter is significance for _____**

Select correct option:

Voice

Video

Data

**Al of above page 66**

**How many methods exist for building routing table?**

Select correct option

1

**2 pages**

3 4

**The process of forwarding the packets of information is called routing**

**The routing table contains information about the _____ immediately around it**

Select correct option:

- Topology of the network
- **Destination page 58**
- Both of the above
- None of the above

**Asynchronous Transfer Mode uses the concept of _____**

Select correct option:

Connection-less networking

- **Connection-oriented networking page 66**

**Which of the following statement is true regarding ATM?**

Select correct option:

- It is a single technology for voice, video and data
- It has low jitter and high capacity

It uses fixed sized small cells. 48 octet's data

- **All of the above page 65**

**A ____ can forward or block messages based on the information in the message itself**

Select correct option

Message digest

Proxy firewall

- **Packet filter firewall not found in handouts**

• Private Key

You can use an IP packet filter firewall to create a set of rules that either discards or accepts traffic over a network connection.(Source to confirm http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/index.jsp?topic=/ipha5/packetfilterfirewall.htm)

**Transmission media are usually categorized as**

Select correct option:

• **Guided or unguided**

Fixed or unfixed

Determinate or indeterminate

Metallic or nonmetallic

**Which of the following is not a guided medium?**

Select correct option:

Twisted-pair cable

Fiber-optic cable

• **Atmosphere**

Coaxial Cable

**Which multiplexing technique transmits digital signals?**

Select correct option:

WDM

FDM

• **TDM**

None of the above

**All destinations on same switch have same _____**

Select correct option:

Router

Information

• **Next Hop page 58**

None of the• above

**Which of the following statement is true regarding Distance-Vector Routing?**

Select correct option:

It is very simple to implement.

• **Packet switch updates its own routing table first. Page 64**

It is used in RIP.

• All of the above

**An exterior switch is one with which _____**

Select correct option:

• **Computers are attached page 59**

No computer is attached•

Hubs are attached externally None of the above

**Frame relay is _____**

Select correct option:

• **Connection oriented service page 64**

• Connectionless service It is typically ranges from 5Mbps to 1000Mbps. None of the above

**An interior switch is one with which _____**

Select correct option:

Computers are attached

• **No computer is attached page 59**

Computers are attached internally

None of the above

**Which of the following is not a benefit of source independence?**

Select correct option:

It allows fast and efficient routing.

• **Packet switch do not need to have complete information about all destinations**

Network functions even if topology changes

None of the above

**Which of the following statement regarding ATM is true?**

Select correct option:

Connections in ATM are called virtual channels

The VC is identified by a 24-bit value formed from the VPI

• **Both (a) and (b)**

None of the above

**ATM header is about the ---------- of the cell.**

Select correct option:

15%

**10%**

20%

5%

**How many methods exist for computing routing table?**

Select correct option:

5

4

3

**2**

**Which of the following statement is true regarding Distance-vector routing?**

Select correct option:

It is very simple to implement.

• **Packet switch updates its own routing table first.**

It is used in RIP.

All of the above

**Which one of the following is a property of static routing?**

Select correct option:

It is inflexible

It is done at boot time

It has low network overload

**All of the above**

**Asynchronous Transfer Mode uses the concept of ----------.**

Select correct option:

Connection-less networking

**Connection-oriented networking**

**Which multiplexing technique shifts each signal to a different carrier frequency?**

Select correct option:

TDM

**FDM**

Both a and b

None of the above

**An interior switch is one with which …….**

Select correct option:

Computers are attached

**No computer is attached**

Computers are attached internally

None of the above

**LAN networks can not be extended to very large networks because of the limitations of.....**

Select correct option:

Area

**Distance**

Routers

Technology

**Which of the following statement is wrong regarding ATM?**

Select correct option:

- It is a single technology for voice, video and data
- It has low jitter and high capacity.
- It uses fixed size, small cells, and 48 octet's data
- **None of the above**

**Which one of the following is the responsibility of Djikstra' algorithm?**

Select correct option:

**To compute the shortest path between two nodes**

To extract next hop information from path information

To insert next hop information into routing table

All of the above

**Which one of the following is a property of dynamic routing?**

Select correct option:

- It is inflexible
- It has low network overload

• **It can work around network failure**

All of the• above

**Which of the following statement is true regarding ATM?**

Select correct option:

ATM is a single technology that is designed to meet the goals of both LANs and WANs.

ATM uses the concept of connection-oriented networking.

**Both (a) and (b)**

None of the above

**Source independence is a phenomena in which next hop to destination does not depend on the ……**

Select correct option:

**Source of packet**

Destination of packet

No of hops

Source of protocol

**If a computer on the network shares resources for others to use, it is called ____**
**a. Server**
**b. Client**
**c. Mainframe**
**Answer: a**

**2. Terminators are used in _____ topology.**
**a. Bus**
**b. Star**
**Answer: a**

**3. In _____ topology, if a computer's network cable is broken, whole network goes down.**
**a. Bus**
**b. Star**
**Answer: a**

**4. For large networks, _____ topology is used.**
**a. Bus**
**b. Star**
**c. Ring**
**Answer: b**

**5. ISO stands for**
**a. International Standard Organization**
**b. International Student Organization**
**c. Integrated Services Organization**
**Answer: a**

**6. ISO OSI model is used in**
**a. Stand alone PC**
**b. Network environment**
**Answer: b**

**7. Network cable lies on _____ layer**
**a. Application**
**b. Network**
**c. Physical**
**Answer: c**

**8. ____ Layer decides which physical pathway the data should take.**
**a. Application**
**b. Network**
**c. Physical**
**Answer: c**

**9. ISDN is an example of _____ network**
**a. Circuit switched**
**b. Packet switched**
**Answer: a**

**10. X.25 is an example of _____ network**
**a. Circuit switched**
**b. Packet switched**
**Answer: b**

**11. _____ allows LAN users to share computer programs and data.**
**a. Communication server**

**b. Print server**
**c. File server**
**Answer: c**

**12. Print server uses _____ which is a buffer that holds data before it is send to the printer.**
**a. Queue**
**b. Spool**
**c. Node**
**Answer: b**

**13. A standalone program that has been modified to work on a LAN by including concurrency controls such as file and record locking is an example of____**
**a LAN intrinsic software**
**b. LAN aware software**
**c. Groupware**
**d. LAN ignorant software**
**Answer: a**

**14. The _____ portion of LAN management software restricts access, records user activities and audit data etc.**
**a. Configuration management**
**b. Security management**
**c. Performance management**
**Answer : b**

**15. What is the max cable length of STP?**
**a. 100 ft**
**b. 200 ft**
**c. 100 m**
**d. 200 m**
**Answer : d**

**16. What is the max data capacity of STP?**
**a. 10 mbps**
**b. 100 mbps**
**c. 1000 mbps**
**d. 10000 mbps**
**Answer: b**

**17. Which connector STP uses?**
**a. BNC**
**b. RJ-11**

**c. RJ-45**
**d. RJ-69**
**Answer : c**

**18. What is the central device in star topology?**
**a. STP server**
**b. Hub/switch**
**c. PDC**
**d. Router**
**Answer : b**

**19. What is max data capacity for optical fiber cable?**
**a. 10 mbps**
**b. 100 mbps**
**c. 1000 mbps**
**d. 10000 mbps**
**Answer : c**

In Direct point to point communication adding the Nth computer requires---------- new connections.

► None of the given

► N2

► N-1

► (N2 –N)/2

*disadvantage In Direct point to point communication is that adding a new computer to the network requires N-1 new connections .(P# 23)*

**Question No: 2 ( M a r k s: 1 )**

In Point-to-Point topology there are two topologies.

► Tree and Ring

► Star and Ring

► Star and Tree

► None of the given

POINT-TO-POINT:

In *Point-to-Point* topology there are two topologies.

1) STAR topology

2) TREE topology

**Question No: 3 ( M a r k s: 1 )**

**In ----------, network occupies the smaller area like a room a floor or a building**

► LAN

► WAN

► MAN

► None of the given

*In LAN network occupies the smaller area like a room a floor or a building.(P# 4)*

**Hardware that calculates a CRC uses two simple components**.

► AND unit and XOR unit

► Shift register and XOR unit

► Shift register and AND unit

► none of the given

CRC uses just two hardware components:

• Shift register

• Exclusive OR ( XOR unit ) *.(P# 20)*

**Question No: 6 ( M a r k s: 1 ) http://vustudents.ning.com/**

The Gigabit Ethernet hardware operates at a rate of --------

► 10 Mbps

► 100 Mbps

► 1000 Mbps

► None of the given

*Gigabit Ethernet that operates at 1 Gbps (1000 Mbps) over fiber optics and twisted pair Ethernet cables.*

**http://vustudents.ning.com/**

**formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.**

► 10 Base 2

► 10 Base 5

► 10 Base T

► none of the given

*10BASE-T:*

*This is another standard of wiring scheme. It is commonly called 10Base-T, Twisted Pair or TP Ethernet. (P# 43)*

**An interface for thin Ethernet must have an _____ connector , and must generate signals according to the_____ specification**.

► RJ-45, 10 Base T

► RJ-45, 10 Base 5

► BNC, 10 Base 2

► BNC, 10 Base T

**A system with redundant bridges might have a problem with_____ in the system**.

► Loop

► Filters

► Spanning Trees

► All given choices

**_____ computes shortest paths in a graph by using weights on edges as a measure of distance.**

► Greedy algorithm

► Distance vector algorithm

► Dijksta's algorithm

► none of the given

*Djikstra'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).*

**Basic LAN technologies such as Ethernet, Token Ring, and FDDI use a _____.**

► Connectionless service paradigm

► Connection-oriented service paradigm

► Both Connectionless and Connection-oriented service paradigm

► None of the given

**_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.**

► Physical Layer

► Network Interface Layer

► Internet Layer

► Transport Layer

*LAYER 4: ensure reliable transfer layer 4 in TCP layering model is transport layer.*

**An Internet Address (IP address) is a unique _____ binary number assigned to a host and used for all communication with host**

► 48-bit

► 32-bit

► 24-bit

► None of the given

*An Internet address (IP address) is a unique 32-bit binary number assigned to a*

*Host and used for all communication with the host*

**the address _____ identifies the physical network to which the computer is attached, while the _____ identifies an individual computer on that network.**

- Prefix, suffix
- suffix, prefix
- suffix, suffix
- none of the given

***PREFIX:***

*It identifies the physical network to which the computers are attached.*

***SUFFIX:***

*It identifies an individual computer on the network.*

**_____ places the boundary between the first and second octets**

- Class A
- Class B
- Class C
- Class D

Class A places the boundary between the first and second octets. Class B places the boundary between the second and third octets, and class C places the boundary between the third and fourth octets.

**_____ places the boundary between the third and fourth octets.**

► Class A

► Class B

► Class C

► Class D

Class A places the boundary between the first and second octets. Class B places the boundary between the second and third octets, and class C places the boundary between the third and fourth octets.

**_____ field of header indicates whether a datagram is a fragment or a complete datagram**.

► FLAGS

► FLAGMENT OFFSET

► IDENTIFICATION

► None of the given

*FRAGMENTATION:*
IP uses fragmentation i.e. datagram's can be split into pieces to fit in network with small MTU. Each fragment is an independent datagram. It includes all header fields. Bit in header indicates that the datagram is a fragment

**_____ provides connectionless service.**

► TCP

► UDP

► IP

► none of the given

*UDP has the following characteristics.*

*• It is an end-to-end protocol. It provides application-to-application communication.*

*• It provides connectionless service.*

*• It is a Message-Oriented protocol.*

*• It uses best-effort delivery service.*

*• It follows arbitrary interaction.*

*• It is operating system independent*

**UDP and TCP are both_____ layer protocols**

► Physical

► Data link

► Network

► Transport

**Connection-oriented service, Point-to-point, Complete reliability, Full-duplex communication, Stream interface, Reliable connection start-up and Graceful connection shutdown are the services provided by_____**

► IP

► None of the given

► TCP

► UDP

SERVICE PROVIDED BY TCP:

Following are the services provided by TCP:

• Connection-oriented service

• Point-to-point

• Complete reliability

• Full-duplex communication

• Stream interface

• Reliable connection start-up

• Graceful connection shutdown

**_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.**

► Physical Layer

► Network Interface Layer

► Internet Layer

► Transport Layer

*LAYER 4: ensure reliable transfer layer 4 in TCP layering model is transport layer*

**_____identifies which application program on receiving computer should receive the data**

► Logical address

► Source port

► Destination Port

► None of the given

*Field Destination Port identifies which application program on receiving computer should receive the data field source port identifies the application programs that sent the data.*

**Question No: 23 ( M a r k s: 1 )**

_____ identifies the application program that sent the data.

► Destination Port

► Source port

► Logical address

► None of the given

*Field Destination Port identifies which application program on receiving computer should receive the data While field source port identifies the application programs that sent the data. (Reference from E-books)*

**The Border Gateway Protocol (BGP) uses_____ for all communication**

► UDP

► TCP

► Both UDP and TCP

► none of the given

BORDER GATEWAY PROTOCOL:

It is most popular Exterior Gateway Protocol in Internet. It has following characteristics:

"It provides routing among autonomous systems (EGP).

"It provides policies to control routes advertised.

"It uses reliable transport (TCP).

**_____ uses distance vector approach to define routing**

► BGP

► OSPF

► RIP

► None of the given

ROUTING INFORMATION PROTOCOL (RIP):

It has the following characteristics:

"It is used for routing within an autonomous system (IGP).

"Hop Count Metric: RIP measures distance in network hops, where each network between the source and destination counts as a single hop.

"It uses UDP for all message transmissions.

"RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows Delivery via multicast.

"It can be used to advertise default route propagation. An organization can use RIP to

Install a default route in each router.

"It uses distance vector algorithm.

**ICMP message transport is acted upon by getting ICMP encrypted in IP.**

► True

► False

*ICMP message transport is acted upon by getting ICMP encapsulated in IP (P# 117)*

**Protocol addresses are abstractions provided by _____.**

► hardware

► software

► operating system

► internet

*Protocol addresses are abstractions provided by software (reference)*

**These packets serve same purpose on _____ as frames on _____**

► Intranet, LAN

► Internet, WAN

► Intranet, WAN

► Internet, LAN

*VIRTUAL PACKETS:*

*These packets serve same purpose in Internet as frames on LAN*

**Address mask defines how many bits of address are in suffix?**

► True

► False

Address mask defines how many bits of address are in prefix. Prefix defines how much of address used to identify network.

**a single networking technology is best for all needs.**

► True

► False

*There is no single networking technology that is best for all needs*

**A computer attached to a given network can only communicate with other computers attached to the same network. Is this a problem with multiple networks?**

► True

► False

the chief problems with multiple networks are as follows:

• A computer attached to a given network can only communicate with other

Computers attached to the same network.

**The term self-identifying is used for Classful IP addresses because the class of the address can be computed from the address_____.**

► Itself

► prefix

► suffix

► mask

*Classful IP addresses are self-identifying because the class of the address can be computed from the address itself*

**Find the class of the address.**
**10100111 11011011 10001011 01101111**

► A

► B

► E

► C
Reference table handouts P # 87

**Find the class of the address:**
**11110011 10011011 11111011 00001111**

► A

► C

► E

► B

Reference table handouts P # 87

**In which method of Address Resolution Protocol the protocol address is determined by hardware address?**
**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

► T

► D

► C

► T, C

Reference table handouts P # 97

**Which method of Address Resolution Protocol requires hardware broadcast?**
**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

► D

► T

► C

► T, D

Reference table handouts P # 97

**Which method of Address Resolution Protocol resolution with minimum delay?**
**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

► T, D

► c

► T

► T, C

Reference table handouts P # 97

**In which method of Address Resolution Protocol the implimentation is more difficult?**
**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

- T, C
- T
- C
- D

Reference table handouts P # 97**://vuzs.net**

**On of the design goals for unicast route propagation is _____.**

- Consistency
- inconsistency
- stability
- dynamic addressing

*On of the design goals for unicast route propagation is stability—continual changes in route are undesirable because they lead to higher jitter and datagram arriving out of order. Thus, once a unicast routing protocol finds a shortest path, it usually retains the route until a failure makes the path unusable. (Reference from E-book)*

**Propagation multicast routing information differs dramatically from unicast route propagation?**

- True
- False

*Propagating multicast routing information differs dramatically from unicast route*

*propagation. The difference arises because internet multicast allows dynamic group membership and autonomous senders*

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**To save traffic, an EGP does not summarize routing information from the autonomous system before passing it to another autonomous system.**

► True

► False

*To save traffic, an EGP summarize routing information from the autonomous system before passing it to another autonomous system. More important an EGP implements policy constraint that allows a system manager to determine exactly what information is released outside the organization.* (*Reference from E-book*)

**In IPv6 the type of address used for collection of computers with same prefix. Are known as_____.**

► Anycast

► Unicast

► Multicast

► Non of the given

*Following are special types of addresses, IPv6 uses:*

***Unicast:*** *It is used for single destination computer.*

***Multicast:*** *It is used for multiple destinations; possibly not at same site.*

***Cluster:*** *This type of address is used for collection of computers with same prefix,*

*Datagram is delivered to one out of cluster.*

**Special types of addresses in IPv6 used for multiple destinations; possibly not same site. Are known as_____**

► Unicast

► Anycast

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► none of the given

Following are special types of addresses, IPv6 uses:

**Unicast:** It is used for single destination computer.

**Multicast:** It is used for multiple destinations; possibly not at same site.

**Cluster:** This type of address is used for collection of computers with same prefix,

Datagram is delivered to one out of cluster.

**UDP offers application programs a Message-Oriented Interface, applications can depend on protocol to preserve data boundaries.**

► True

► False

*UDP offers application programs a Message-Oriented Interface. It does not divide messages into packets for transmission and does not combine messages for delivery.*

*ADVANTAGES:*

• *Applications can depend on protocol to preserve data boundaries.*

**Reliability is the responsibility of the _____ layer**

► Network

► Data link

► Transport

► Application

*Reliability is the responsibility of the Transport layer*

**TCP uses _____ mechanism to control the flow of data.**

► door

► window

► acknowledgment

► retransmission

**In Direct point to point communication adding the Nth computer requires---------- new connections.**

► None of the given

► N2

► N-1

► (N2 –N)/2

*disadvantage In Direct point to point communication is that adding a new computer to the network requires N-1 new connections .(P# 23)*

**In Point-to-Point topology there are two topologies**.

► Tree and Ring

► Star and Ring

► Star and Tree

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POINT-TO-POINT:

In *Point-to-Point* topology there are two topologies.

1) STAR topology

2) TREE topology

**In ----------, network occupies the smaller area like a room a floor or a building**

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► WAN

► MAN

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*In LAN network occupies the smaller area like a room a floor or a building.(P# 4)*

**Hardware that calculates a CRC uses two simple components.**

► AND unit and XOR unit

► Shift register and XOR unit

► Shift register and ANDunit

► none of the given

CRC uses just two hardware components:

• Shift register

• Exclusive OR ( XOR unit ) *.(P# 20)*

**The Gigabit Ethernet hardware operates at a rate of --------**

► 10 Mbps

► 100 Mbps

► 1000 Mbps

► None of the given

*Gigabit Ethernet that operates at 1 Gbps (1000 Mbps) over fiber optics and twisted pair Ethernet cables.*

**formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.**

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► 10 Base 5

► 10 Base T

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*10BASE-T:*

*This is another standard of wiring scheme. It is commonly called 10Base-T, Twisted Pair or TP Ethernet. (P# 43)*

**An interface for thin Ethernet must have an _____ connector , and must generate signals according to the_____ specification**.

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► RJ-45, 10 Base 5

► BNC, 10 Base 2

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► Filters

► Spanning Trees

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**_____ computes shortest paths in a graph by using weights on edges as a measure of distance.**

► Greedy algorithm

► Distance vector algorithm

► Dijksta's algorithm

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*Djikstra'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).*

**Basic LAN technologies such as Ethernet, Token Ring, and FDDI use a _____.**

- Connectionless service paradigm
- Connection-oriented service paradigm
- Both Connectionless and Connection-oriented service paradigm
- none of the given

**_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.**

- Physical Layer
- Network Interface Layer
- Internet Layer
- Transport Layer

*LAYER 4: ensure reliable transfer layer 4 in TCP layering model is transport layer.*

**An Internet Address (IP address) is a unique _____ binary number assigned to a host and used for all communication with host**

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- 32-bit
- 24-bit

► None of the given

*An Internet address (IP address) is a unique 32-bit binary number assigned to a*

*host and used for all communication with the host*

**The address _____ identifies the physical network to which the computer is attached, while the _____ identifies an individual computer on that network.**

► prefix , suffix

► suffix , prefix

► suffix , suffix

► None of the given

***PREFIX:***

*It identifies the physical network to which the computers are attached.*

***SUFFIX:***

*It identifies an individual computer on the network.*

**_____ places the boundary between the first and second octets**

► Class A

► Class B

► Class C

► Class D

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► Class B

► Class C

► Class D

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**_____ field of header indicates whether a datagram is a fragment or a complete datagram.**

► FLAGS

► FLAGMENT OFFSET

► IDENTIFICATION

► None of the given

*FRAGMENTATION:*

**_____ provides connectionless service.**

► TCP

► UDP

► IP

► none of the given

*UDP has the following characteristics.*

*• It is an end-to-end protocol. It provides application-to-application communication.*

*• It provides connectionless service.*

*• It is a Message-Oriented protocol.*

*• It uses best-effort delivery service.*

*• It follows arbitrary interaction.*

*• It is operating system independent*

**UDP and TCP are both_____ layer protocols**

► Physical

► Data link

► Network

► Transport

**Connection-oriented service, Point-to-point, Complete reliability, Full-duplex communication, Stream interface, Reliable connection startup and Graceful connection shutdown are the services provided by_____**

► IP

► None of the given

► TCP

► UDP

SERVICE PROVIDED BY TCP:

Following are the services provided by TCP:

• Connection-oriented service

• Point-to-point

• Complete reliability

• Full-duplex communication

• Stream interface

• Reliable connection start-up

• Graceful connection shutdown

**_____ protocols of TCP/IP layering model specify how to ensure reliable transfer.**

► Physical Layer

► Network Interface Layer

► Internet Layer

► Transport Layer

*LAYER 4: ensure reliable transfer layer 4 in TCP layering model is transport layer*

**_____identifies which application program on receiving computer should receive the data**

- Logical address
- Source port
- Destination Port
- None of the given

**_____ identifies the application program that sent the data.**

- Destination Port
- Source port
- Logical address
- None of the given

The Border Gateway Protocol (BGP) uses_____ for all communication

- UDP
- TCP
- Both UDP and TCP

► None of the given

BORDER GATEWAY PROTOCOL:

It is most popular Exterior Gateway Protocol in Internet. It has following characteristics:

"It provides routing among autonomous systems (EGP).

"It provides policies to control routes advertised.

"It uses reliable transport (TCP).

.

**_____ uses distance vector approach to define routing**

► BGP

► OSPF

► RIP

► None of the given

ROUTING INFORMATION PROTOCOL (RIP):

It has the following characteristics:

"It is used for routing within an autonomous system (IGP).

"Hop Count Metric: RIP measures distance in network hops, where each network

between the source and destination counts as a single hop.

"It uses UDP for all message transmissions.

"RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows delivery via multicast.

"It can be used to advertise default route propagation. An organization can use RIP to install a default route in each router.

"It uses distance vector algorithm.

**ICMP message transport is acted upon by getting ICMP encrypted in IP.**

- True
- False

*ICMP message transport is acted upon by getting ICMP encapsulated in IP (P# 117)*

**Protocol addresses are abstractions provided by _____.**

- hardware
- software
- operating system
- internet

*Protocol addresses are abstractions provided by software*

**These packets serve same purpose on _____ as frames on _____**

- Intranet, LAN
- Internet, WAN

► Intranet, WAN

► Internet, LAN

*VIRTUAL PACKETS:*

*These packets serve same purpose in Internet as frames on LAN*

**Address mask defines how many bits of address are in suffix?**

► True

► False

Address mask defines how many bits of address are in prefix. Prefix defines how much of address used to identify network.

**A single networking technology is best for all needs**.

► True

► False

*There is no single networking technology that is best for all needs*

**A computer attached to a given network can only communicate with other computers attached to the same network. Is this a problem with multiple networks?**

► True

► False

the chief problems with multiple networks are as follows:

• A computer attached to a given network can only communicate with other

Computers attached to the same network.

**The term self-identifying is used for Classful IP addresses because the class of the address can be computed from the address_____.**

► Itself

► prefix

► suffix

► mask

*Classful IP addresses are self-identifying because the class of the address can be computed from the address itself*

**Find the class of the address.**
**10100111 11011011 10001011 01101111**

► A

► B

► E

► C

Reference table handouts P # 87

**Find the class of the address:**
**11110011 10011011 11111011 00001111**

► A

► C

► E

► B

Reference table handouts P # 87

**In which method of Address Resolution Protocol the protocol address is determined by hardware address?**
**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

► T

► D

► C

► T, C

Reference table handouts P # 97

**Which method of Address Resolution Protocol requires hardware broadcast?**
**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

► D

► T

► C

► T, D

Reference table handouts P # 97

**Which method of Address Resolution Protocol resolution with minimum delay?**
**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

► T, D

► c

► T

► T, C

Reference table handouts P # 97

**In which method of Address Resolution Protocol the implementation is more difficult?**
**Were "T" stands for Table lookup, "C" for Closed-form Computation and "D" for Data Exchange?**

► T, C

► T

► C

► D

Reference table handouts P # 97

**On of the design goals for unicast route propagation is _____.**

► Consistency

► inconsistency

► stability

► dynamic addressing

*On of the design goals for unicast route propagation is stability—continual changes in route are undesirable because they lead to higher jitter and datagram arriving out of order. Thus, once a unicast*

*routing protocol finds a shortest path, it usually retains the route until a failure makes the path unusable. (Reference from E-book)*

**Propagation multicast routing information differs dramatically from unicast route propagation?**

► True

► False

*Propagating multicast routing information differs dramatically from unicast route propagation. The difference arises because internet multicast allows dynamic group membership and autonomous senders*

**to save traffic an EGP does not summarize routing information from the autonomous system before passing it to another autonomous system.**

► True

► False

*to save traffic, an EGP summarize routing information from the autonomous system before passing it to another autonomous system. More important an EGP implements policy constraint that allows a system manager to determine exactly what information is released outside the organization.* (*Reference from E-book*)

**In IPv6 the type of address used for collection of computers with same prefix. Are known as_____**

► Anycast

► Unicast

► Multicast

► none of the given

*Following are special types of addresses, IPv6 uses:*

***Unicast:*** *It is used for single destination computer.*

***Multicast:*** *It is used for multiple destinations; possibly not at same site.*

***Cluster:*** *This type of address is used for collection of computers with same prefix,*

*Datagram is delivered to one out of cluster.*
**vuzs.net**

**Special types of addresses in IPv6 used for multiple destinations; possibly not at same site. _____.**

- Unicast
- Anycast
- Multicast
- none of the given

Following are special types of addresses, IPv6 uses:

**Unicast:** It is used for single destination computer.

**Multicast:** It is used for multiple destinations; possibly not at same site.

**Cluster:** This type of address is used for collection of computers with same prefix,

Datagram is delivered to one out of cluster.

**UDP offers application programs a Message-Oriented Interface, applications can depend on protocol to preserve data boundaries.**

- True
- False

*UDP offers application programs a Message-Oriented Interface. It does not divide messages into packets for transmission and does not combine messages for delivery.*

*ADVANTAGES:*

• *Applications can depend on protocol to preserve data boundaries.*

**Reliability is the responsibility of the _____ layer**

► Network

► Data link

► Transport

► Application

*Reliability is the responsibility of the Transport layer*

**TCP uses _____ mechanism to control the flow of data.**

► Door

► window

► acknowledgment

► retransmission

*TCP uses window mechanism to control the flow of data.*

**the time for acknowledgement to arrival of packet depends on.**

► Distance to destination and Current traffic conditions

► Current traffic conditions

► Distance to destination

► non of these

*The time for acknowledgement to arrive depends on:*

• *Distance to destination*

• *Current traffic conditions*

**FDDI can transmits data at a rate of ----------**

► 100 million bits per second

► 10 million bits per second

► 1000 million bits per second

► None of the given

**the time for acknowledgement to arrival of packet depends on.**

► Distance to destination and Current traffic conditions

► Current traffic conditions

► Distance to destination

► non of these

*The time for acknowledgement to arrive depends on:*

• *Distance to destination*

• *Current traffic conditions*

**FDDI can transmits data at a rate of ----------**

► 100 million bits per second

► 10 million bits per second

► 1000 million bits per second

► None of the given

| | |
|---|---|
| | |
| | Question:-:<br><br>Subject: ipv6<br><br>Sir, |

suppose IPv6 scheme is deployed in computer network of medical c
responsible for fragmentation of IP datagram?

0

-

Answer:-

IPv6 source (not intermediate routers) is responsible for fragmentat
datagrams larger than network MTU (Maximum Transmission Unit).
datagram to reach destination.

Question:-:

Subject: routing

Routing of a packet from source to destination does not depend on
what whould be the advantages of this in-dependency.

0

-

Answer:-

Next hop to destination does not depend on source of packet. This p
Independence'. It has several benefits. It allows fast and efficient ro

Packet switch need not hove complete information about all destina
hop so reduces total information and increases dynamic robustness
function even if topology changes without notifying entire network.

why the internet multicast routing is difficult?

Internet multicast routing is difficult because internet multicast allows arbitrary computer to
multicast group at any time. It allows arbitrary member to leave multicast group at any time
also allows arbitrary computer to send message to a group (even if not a member).

Subject: collisions in network

Sir, can network be totally protected from collisions with the help of

0

-

Answer:-

EXPONENTIAL BACK OFF

It reduces likely hood of sequence of collision.

Subject: tcp/ip

TCP/IP supports different approaches of address resolution algorith
what are their names?

0

-

Answer:-

Address Resolution Techniques

Address resolution algorithms can be grouped into three basic categ

- Table lookup
- Closed-form computation
- Message Exchange

Subject: NAT

Suppose an organization wants to share the transmission of multiple
single publicly routable IP address. To achieve this goal it uses NAT.
would be the alternative of NAT. ??

0

-

Answer:-

NAPT (Network Address and Port Translation) or TCP Slicing

TWICE NAT

CAT

Subject: gateway

Reliability is the base need of communication systems but some gat
unreliable. Sir it is requested to convey us which gateway protocol i
transportation of messages?

0

Answer:-

We have unreliable transmission in Routing Information Protocol (R

Subject: ARP

Suppose in a computer network of multinational company, network
receives some ARP messages while communication with other syste
Sir it is requested to to tell how does system deal these incoming AR

0

Answer:-

When an ARP message arrives, the protocol specifies that the receiv
steps.

First the receiver extracts the sender's addresses binding and checks
cache. If not, it updates the cache.

The receiver examines the operation field of the message to determ
request or a response. If the message is a request, the receiver com
with the local protocol address. If the two are identical, the comput
and must send an ARP response.

fw-zSs CV1Rml3q8

Subject: multicast

-

Answer:-

Several multicast protocols exist. Some of the proposed protocols a

Distance Vector Multicast Routing Protocol (DVMRP)

Core Based Trees (CBT)

Protocol Independent Multicast_ Sparse Mode (PIM-SM)

Protocol Independent Multicast _ Dense Mode (PIM-DM)

Multicast Extensions to the Open Shortest Path First Protocol (MOS

98

Subject: MULTICASTING

.

true

Question:-: 78

Subject: EGP

What gateway protocol mostly used as EGP with some properties.

0

-

Border Gateway Protocol (BGP) is most popular Exterior Gateway Protocol in Internet. It has following characteristics:

• It provides routing among autonomous systems (EGP).

• It provides policies to control routes advertised.

• It uses reliable transport (TCP).

• It gives path of autonomous systems for each destination.

• Currently the EGP is of choice in the Internet.

• It provides facilities for Transit Routing.

Subject: DELAY

What type of Transport Protocol is used when Packet dropping is pr

0

-

Answer:-

UDP (User datagram protocol) is used in this case.

76

Subject: IP DATAGRAM

What is the right place in IP Datagram Header to add extra options?

0

-

Answer:-

Several options can be added in IP options field.

Subject: DELAY

Networking Components take sometime while forwarding data over
type of delay

0

-

Answer:-

There are following types of delay:

PROPAGATION DELAY:

It defined as the time to travel across medium.

SWITCHING DELAY:

It is the time required for network component (hub, bridge, packet s

ACCESS DELAY:

It is the time required to get control of medium (CSMA/CD, token).

QUEUING DELAY:

It is the time enquired in packet switches.

74

Subject: OSPF

Which characteristics OSPF have?

0

-

Answer:-

Following are the characteristics of Open Shortest Path First (OSPF):

1. To satisfy demand for a routing protocol that can scale t
devised an IGP known as the Open Shortest Path

First Protocol (OSPF).

2. OSPF allows subdivision of Autonomous System into are

3. The link status information is propagated within an area

4. The routes are summarized before being propagated to

5. It reduces overhead (less broadcast traffic).

6. Because it allows a manager to partition the routers and system into multiple areas

7. OSPF can scale to handle a larger number of routers tha

73

Subject: ARP

Network administrator receives some messages on his system. How incoming ARP messages?(

0

-

Answer:-

Following sequence of steps will be performed:

1. First the receiver extracts the sender's addresses bindin
present in the cache.

2. If not, it updates the cache.

3. The receiver examines the operation field of the messag
message is a request or a response.

4. If the message is a request, the receiver compares the fi
local protocol address.

5. If the two are identical, the computer is the target of th
response.

Subject: tcp

How congestion is controlled by TCP?(

0

-

Answer:-

TCP uses a number of mechanisms to achieve high performance and
where network performance can fall by several orders of magnitude
rate of data entering the network, keeping the data flow below a ra
They also yield an approximately max-min fair allocation between fl

Acknowledgments for data sent, or lack of acknowledgments, are us
conditions between the TCP sender and receiver. Coupled with time
can alter the behavior of the flow of data. This is more generally ref
and/or network congestion avoidance.

Modern implementations of TCP contain four intertwined algorithm
avoidance, fast retransmit, and fast recovery (RFC 5681).

71

Subject: snuffer

What are the operations of network snuffer

0

-

Answer:-

The basic idea behind the operation of network analyzer (Network S
network interface that receives all frames, which is called promiscuo
computers have interface that can be configured for promiscuous m
software computer can examine any frame on LAN. In this way the c
guaranteed to be private. This computer receives and displays (but c
the LAN. Network analyzer can be configured to filter and process fr
specific type of size. It displays only frames from or to specific comp
configured to match any value of any field and capture only these fr
specifications.

70

Subject: reachbility

How can we test any website for example www.vu.edu.pk

0

-

Answer:-

This is done through PING command for probing the Internet.

69

Subject: protocol

which protocol is used within organization.? Which protocol is use
network over countries?

0

Answer:-

An autonomous system can be thought of as a set of networks and r
administrative authority (organization). Interior Gateway Protocol (
within autonomous system (organization). Following are the Interne

Border Gateway protocol

Routing Information Protocol

Open Shortest Path First Protocol

For secure data communication in an organization Virtual Private Ne

**Question No: 31 ( Marks: 2 )**
What are the advantages of a multipoint connection over a point-to-point connection?
**Answer:**
**Point-to-point connection is limited to two devices, where else more than two devices share a single link in multipoint connection. Multipoint connection can be used for fail-over and reliability.**

**Question No: 32 ( Marks: 2 )**
What's the name of the telephone service in which there is no need of dialing.
**Answer:**
**\DSS (digital data service) is the telephone service in which there is no need of dialing.**

**Question No: 33 ( Marks: 2 )**
Which type of frames are present in BSC frames?
**Answer:**
**There are two types of frames that are present in BSC.**
**1. Control Frames and**
**2. Data Frames**

**Question No: 34 ( Marks: 2 )**
**What methods of line discipline are used for peer to peer and primary secondary communication?**
**Answer:**
Line discipline is done in two ways:
1. ENQ/ACK (Enquiry Acknowledgement)
This is used for peer to peer communication.
2. Poll/ Select
This method is used for primary secondary communication.

**Question No: 35 ( Marks: 3 )**
**How does the checksum checker know that the received data unit is undamaged? [3]**
**Answer:**
Checksum Checker or generator:
The sender subdivides data units into equal segments of 'n' bits(16 bits)
1. These segments are added together using one's complement.
2. The total (sum) is then complemented and appended to the end of the original data unit as redundancy bits called CHECKSUM.
3. The extended data unit is transmitted across the network.
4. The receiver subdivides data unit and adds all segments together and complement the result.
5. If the intended data unit is intact, total value found by adding the data segments and the checksum field should be zero.
6. If the result is not zero, the packet contains an error & the receiver rejects it.

**Question No: 36 ( Marks: 3 )**
**Which one has more overhead, a repeater or a bridge? Explain**

**your answer. [3]**

**Answer:**

A bridge has more overhead than a repeater. A bridge processes the packet at two
layers ; a repeater processes a frame at only one layer. A bridge needs to search a
table and find the forwarding port as well as to regenerate the signal; a repeater
only regenerates the signal. In other words, a bridge is also a repeater (and more); a
repeater is not a bridge.

**Question No: 37 ( Marks: 3 )**

**Write down disadvantages of Ring Topology.**

**Answer:**

Disadvantages of Ring Topology
Unidirectional Traffic
A break in a ring that is a disabled station can disable the entire network
Can be solved by using:
Dual Ring or
A switch capable of closing off the Break

**Question No: 38 ( Marks: 3 )**

**How parity bits are counted in VRC error detection method technique in case of odd parity generator?**

**Answer:**

For example:
We want to TX the binary data unit 1100001
Adding together the number of 1's gives us 3, an odd number
Before TX, we pass the data unit through a parity generator, which counts the 1's and appends the parity bit (1) to the end
The total number of 1's is now 4, an even number The system now transfers the entire expanded across the network link When

it reaches its destination, the RX puts all 8 bits through an even parity checking function
If the RX sees 11100001, it counts four ones, an even number and the data unit passes
When the parity checker counts the 1's, it gets 5 an odd number
The receiver knows that an error has occurred somewhere and therefore rejects the whole unit Some systems may also use ODD parity checking The principal is the same as even parity

**Question No: 40 ( Marks: 5 )**
**Explain Protocol Data Unit (PDU)?**
**Answer:** Protocol data unit (PDU) is an OSI term that refers generically to a group of information added or removed by a particular layer of the OSI model. In specific terms, an LxPDU implies the data and headers defined by layer x. Each layer uses the PDU to communicate and exchange information. The PDU information is only read by the peer layer on the receiving device and then stripped off, and data is handed over to the next upper layer.

Question No: 21 ( Marks: 2 )
Is there a comparison between TCP/IP reference model and OSI reference model.

Both the TCP/IP and OSI are international standards for data communication. Both use the concept of protocol layering. These are the conceptual tools that is often used to show how various protocols and technologies fit together to implement networks. The functions that the model represents are much the same. This means that the TCP/IP and the OSI models are really quite similar in nature even if they don't carve up the network functionality pie in precisely the same way. There is a fairly natural correspondence between the TCP/IP and OSI layers; it just isn't always a "one-to-one" relationship. Since the OSI model is used

so widely, it is common to explain the TCP/IP architecture both in terms of the TCP/IP layers and the corresponding OSI layers_

Question No: 22 ( Marks: 2 )

How can a datagram be transmitted across a physical network that does not understand the datagram format?

Encapsulate!

- · The network interface layer encapsulates an entire datagram in the data area of a hardware frame.
- · The network hardware ignores the datagram format.
- · The hardware treats a frame containing a datagram like any other frame.
- · The sender places a frame type in the frame header indicating that the frame contains a datagram.
- · The receiver reads the frame type and knows the frame contains a datagram.

No: 26 ( Marks: 3 )

Why does IPv6 use separate Extension Headers?

IPv6 use separate Extension Headers. Fragmentation information is kept in separate extension header. Each fragment has base header and (inserted) fragmentation header. Entire datagram including original header may be fragmented.

Question No: 27 ( Marks: 5 )

Consider the IP addresses: 178.200.127.5 and the corresponding subnet masks 255.255.255.0, then find out the following:

a. The number of bits used for subnetting (Answer 8 bits)

b. Total number of host in the subnet (Answer 254 )

c. The network address of the subnet. (Answer 178.200.127.0)

d. The subnet address of the IP address.

Here is the online calculator for subnetting

NOTE. This is just for concept not included in the answer

The subnet mask determines what portion of the TCP/IP address represents your network and what portion can be used for your hosts. The network number represents the street I live on, and the host portion is used for the numbers on all the houses on my street.

A subnet mask of 255.255.255.0 means that the first three octets of the address will be used for the network, and thus our network number is 192.168.1. This means we can have 254 computers on this network, because the fourth octet is not being used by the network portion of the address. We know this because of the 0 in the subnet mask (255.255.255.0).

Question No: 28 ( Marks: 5 )

How does IP software reassemble fragments that arrive out of order?

A unique ID number of each outgoing datagram

When a router fragments the datagram, the router copies the ID number into each fragment.

The fragment OFFSET field tells a receiver how to order fragments within a given datagram

The process of creating a copy of the original datagram from fragments is called reassembly.

Question No: 29 ( Marks: 5 )

Write down the comparison of Distance- vector and Link – state algorithm?

COMPARISON:

DISTANCE-VECTOR ROUTING:

- It is very simple to implement.
- Packet switch updates its own routing table first.
- It is used in RIP.

LINK-STATE ALGORITHM:

- It is much more complex.
- Switches perform independent computations.
- It is used in OSPF.

Question No: 30 ( Marks: 10 )

Descibe in detail what is the purpose of the following table? What sort of information can be extracted?

| First Four Bits Of address | Table index in decimal | Class of Address |
|---|---|---|
| 0000 | 0 | A |
| 0001 | 1 | A |
| 0010 | 2 | A |
| 0011 | 3 | A |
| 0100 | 4 | A |
| 0101 | 5 | A |
| 0110 | 6 | A |
| 0111 | 7 | A |
| 1000 | 8 | B |
| 1001 | 9 | B |
| 1010 | 10 | B |
| 1011 | 11 | B |
| 1100 | 12 | C |
| 1101 | 13 | C |
| 1110 | 14 | D |
| 1111 | 15 | E |

The table shows in the figure, how the class of address can be computed.

Question No: 31 ( Marks: 10 )

List down and describe at least five characteristics of Routing Information Protocol.

ROUTING INFORMATION PROTOCOL (RIP):

It has the following characteristics:

"It is used for routing within an autonomous system (IGP).
"Hop Count Metric: RIP measures distance in network hops, where each network
Between the source and destination counts as a single hop.
"It uses UDP for all message transmissions.
"RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows
Delivery via multicast.
"It can be used to advertise default route propagation. An organization can use RIP to
Install a default route in each router.
"It uses distance vector algorithm.
"RIP allows hosts to listen passively and update its routing table

•

**Question No: 22 ( Marks: 2 )**

**Does OSPF only share information within an area or does it allow communication between areas**?

OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area. It reduces overhead (less broadcast traffic). Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas, OSPF can scale to handle a larger number of routers than other IGPs.

**Question No: 24 ( Marks: 3 )**

**Describe the difference between static and dynamic routing?**

**STATIC ROUTING:**

It is one of the forms of Internet routing. In Static routing, the table is initialized

When system boots and there is no further changes.

**DYNAMIC ROUTING:**

In dynamic routing the table is initialized when system boots. It includes routing

Software which learns routes and updates table. In this way continuous changes are

possible due to routing software.

**Question No: 25 ( Marks: 3 )**

**What is the first address in the block if one of the addresses is 140.120.84.24/20?**

**The first address in the block is 140.120.80.0/20**

WE can use the following short cut to find the first address

1. divide the prefix length into four groups(corresponding to the four bytes in an address) and find the number of 1s in each group
2. if the number of 1s in a group is 8 the corresponding byte in the first address is the same (no change)
3. If the number of 1s in the group is zero (no1s), the corresponding byte in the first address is 0
4. if the number of 1s in a group is between zero and eight, we keep the corresponding bits in that group

**Question No: 26 ( Marks: 3 )**

**Write three new features of IPV6.**

The new features of IPV6 are as follows:

• IPV6 addresses are 128 bits.

• Header format is entirely different.

• Additional information is stored in optional extension headers, followed by data.

• Flow label and quality of service allows audio and video applications to establish

Appropriate connections.
• New features can be added more easily. So it is extensible.

**Question No: 27 ( Marks: 5 )**

**What is the difference between an interior gateway protocol and an exterior gateway protocol? Name an example of each.**

**INTERIOR GATEWAY PROTOCOLS (IGPs):**

It is used among routers within autonomous system. The destinations lie within IGP.

**EXTERIOR GATEWAY PROTOCOLS (EGPs):**

It is used among autonomous systems. The destinations lie throughout Internet

**Question No: 29 ( Marks: 5 )**

**What are IPv6 ADDRESS NOTATION?**

**IPv6 ADDRESS NOTATION:**

128-bit addresses unwisely in dotted decimal; requires 16 numbers:

105.220.136.100.255.255.255.255.0.0.18.128.140.10.255.255

Groups of 16-bit numbers in hex separated by colons – colon hexadecimal (or colon hex).

69DC: 8864:FFFF: FFFF: 0:1280:8C0A:FFFF

Zero-compression – series of zeroes indicated by two colons

FF0C: 0:0:0:0:0:0:B1

FF0C::B1

IPv6 address with 96 leading zeros is interpreted to hold an IPv4 address.

**Question No: 30 ( Marks: 10 )**

**LIST SOME CHARACTERISTICS OF A CLIENT.**

**CHARACTERISTICS OF A CLIENT:**

The characteristics of a client are explained below:

"Client is an arbitrary application program.

"It becomes client temporarily.

"It can also perform other computations.

"It is invoked directly by the user.

"It runs locally on the user's computer.

"It actively initiates contact with a server.

"It contacts one server at a time.

**Question No: 31 ( Marks: 10 )**

**With help of the diagram below, explain TCP Segment Format:**

TCP uses single format for all messages. TCP uses the term segment to refer to a message. Each message sent from TCP on one machine to TCP on another machine uses this format including data and acknowledgement

| Field Name | Size (bytes) | Description |
|---|---|---|
| ***SourcePort*** | 2 | ephemeral (client) port number**SourcePort:** The 16-bit port number of the process that originated the TCP segment on the source device. This will normally be an for a request sent by a client to a server |
| ***DestinationPort*** | 2 | ***DestinationPort:*** The 16-bit port number of the process that is the ultimate intended recipient of the message on the destination device. |
| ***Sequence Number*** | 4 | ***Sequence Number:*** For normal transmissions, the sequence number of the first byte of data in this segment. In a connection request (*SYN*) message, this carries the initial sequence number (ISN) of the source TCP. |
| ***Acknowledgment Number*** | 4 | ***Acknowledgment Number:*** When the *ACK* bit is set, this segment is serving as an acknowledgment (in addition to other possible duties) and this field contains the sequence number the source is next expecting the destination to send. |
| ***Window*** | 2 | ***Window:*** Indicates the number of octets of data the sender of |

| | | |
|---|---|---|
| | | this segment is willing to accept from the receiver at one time. This normally corresponds to the current size of the buffer allocated to accept data for this connection. |
| ***Checksum*** | 2 | 16-bit checksum for data integrity protection***Checksum:*** A , computed over the entire TCP datagram plus a special "pseudo head... |
| ***Urgent Pointer*** | 2 | ***Urgent Pointer:*** Used in conjunction with the *URG* control bit for priority data transfer. This field contains the sequence number of the last byte of urgent data. |
| ***Options*** | Variable | ***Options***: TCP includes a generic mechanism for including one or more sets of optional data in TCP segment. Each of the options can be either one byte in length or variable length. The first byte if the option kind subfield and it's value specifies the type of option, which in turn indicates whether the option is just a single byte or multiple bytes. Options that are many bytes consist of three fields |

| **Subfield name** | **Size (bytes)** | **Description** |
|---|---|---|
| Option-kind | 1 | **Option-kind:** specifies the option type |
| Option-length: | 1 | **Option-length:** the length of the entire option in bytes, including the option-kind and option-length fields. |
| Option-data | Variable | **Option-data:** the option data itself in at least one oddbll case, this field is omitted(making option length equal to 2) |

5) Message oriented Interface, advantages and disadvantages (5) (P# 120)
MESSAGE-ORIENTED INTERFACE:
UDP offers application programs a Message-Oriented Interface. It does not divide messages into packets for transmission and does not combine messages for delivery.
Let's discuss its advantages and disadvantages.
ADVANTAGES:
• Applications can depend on protocol to preserve data boundaries.
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DISADVANTAGES:
• Each UDP message must fit into a single IP datagram.

• It can result to an inefficient use of the underlying network.

6) Concept of area in OSPF (Open Shortest Path First Protocol) (P# 120)
OSPF AREAS:
OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area. It reduces overhead (less broadcast traffic). Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas, OSPF can scale to handle a larger number of routers than other IGPs.

7) Benefits of data stuffing :- P# 120)
In general to distinguish between data being sent and control information such as frame delimiters network systems arrange for the sending side to change the data slightly before it is sent because systems usually insert data or bytes to change data for transmission, the technique is known as Data Stuffing.

Write some merits used by routing protocols P# 135)
A routing protocol is a protocol that specifies how routers communicate with each other, disseminating information that enables them to select routes between any two nodes on a computer network, the choice of the route being done by routing algorithms.
There are two broad classes of Internet Routing Protocol:
INTERIOR GATEWAY PROTOCOLS (IGPs):
It is used among routers within autonomous system. The destinations lie within IGP.
EXTERIOR GATEWAY PROTOCOLS (EGPs):
It is used among autonomous systems. The destinations lie throughout Internet
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10) unicast rounting and multicast routing P# 114)
MULTICAST ROUTING:
Internet multicast routing is difficult because internet multicast allows arbitrary computer to join multicast group at any time. It allows arbitrary member to leave multicast group at any time. It also allows arbitrary computer to send message to a group (even if not a member)

Unicast: It is used for single destination computer.

Multicast: It is used for multiple destinations; possibly not at same site.

why EGP not use routing metric??(5) P# 114)

Although EGP is a dynamic routing protocol, it uses a very simple design. It does not use metrics and therefore cannot make true intelligent routing decisions
We can't use EGP in routing metric because EGP is used among autonomous systems. The destinations lie throughout Internet

How congestion control by tcp?(5) P# 128)
The goal of congestion control is to avoid adding retransmissions to an already congested network. Reducing the window size quickly in response to the lost messages does it. It is assumed that loss is due to congestion.
When a TCP connection first begins, the Slow Start algorithm initializes a congestion window to one segment, which is the maximum segment size (MSS) initialized by the receiver during the connection establishment phase. When acknowledgements are returned by the receiver, the congestion window increases by one segment for each acknowledgement returned. Thus, the sender can transmit the minimum of the congestion window and the advertised window of the receiver, which is simply called the transmission window

IPv6 addressing (5) P# 114)
IPv6 ADDRESSING:
IPv6 uses 128-bit addresses. A 128-bit address includes network prefix and host suffix.
An advantage of IPv6 addressing is that it has no address classes i.e. prefix/suffix boundary can fall anywhere.
Following are special types of addresses, IPv6 uses:

Unicast: It is used for single destination computer.

Multicast: It is used for multiple destinations; possibly not at same site.

Cluster: This type of address is used for collection of
Define Jitter (2) (P# 66)

JITTER:
Jitter is the term used for variance in transmission delays.
Jitter is significance for voice, video and data. In LANs, jitter can occur when a packet is delayed because the network is busy.

DEFINE TCP(2) (P# 122,123)
TCP provides reliable transport service. TCP is the major transport protocol in the TCP/IP suite. It uses unreliable datagram service offered by IP when sending data to another computer. It provides reliable data delivery service to applications.
What is client server (2) (P# 145)

The two application programs make contact in the following way:
One application actively begins execution first and another application waits passively at prearranged location. This process is called client-server interaction.
How receiver knows incoming frame is ip datagram (2)
According to its IP address nature because in IP header parts all the information available that which kind of the datagram the receiver received.
Why organization does not use single router(3)
if there is no signal, how sever come to know there is communication arrived(3) by just guessing and after fixed time the sender can't received any response so the sender again sent he data so when he received any ACK than we know now the path is clear the ready to communicate with receiver
An other paper

11
what are two important principal that IP address hierarchy grantee? 2 marks
THE IP ADDRESS HIERARCHY:
Each 32-bit IP address is divided into two parts:
PREFIX:
It identifies the physical network to which the computers are attached.

SUFFIX:
It identifies an individual computer on the network.

does OSPF share information within an area or it allow communication b/w area? 2 marks (P# 141)
OSPF AREAS:
OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area. It reduces overhead (less broadcast traffic). Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas, OSPF can scale to handle a larger number of routers than other IGPs.

Where should ICMP message be sent? 2 marks (P# 117)
ICMP message is sent in response to incoming datagrams with problems. ICMP message is not sent for ICMP message.

How the TCP is is reliable protocol? 2 marks (P# 123)
Reliability is fundamental in a computer system. Software in the Internet must provide the same level of reliability as a computer system. Software must guarantee prompt and reliable communication without any loss, duplication, and change in the order.
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Where the connection is orients service use connection identifier instead of full address? 2 marks (P# 67)
The connection-oriented service paradigm for networking is similar to the manner in which telephones are used. This is given as follows: A caller dials a number of the destination. The telephone at the destination signals the arrival of a connection request. If the called person does not answer; the caller gives up after waiting for a timeout. If the called person does answer, then the connection is established.
In data communication, as binary connection identifier is given to each of the two Parties to enable identification of the connection.

Summarize IP multicast semantics? 2 marks (P# 142)
IP MULTICAST SEMANTICS:
IP multicast group is anonymous in two ways:
1. Neither a sender nor a receiver knows the identity or the number of group members.
2. Routers and hosts do not know which applications will send a datagram to a group.

Internet routing how does a host join and leave the gorup?3 marks (on net )
A host sends a request to create, join, or leave a group to an immediate neighbor gateway. If the host requests creation of a group, a new network membership record is created by the serving gateway and distributed to all other gateways. If the host is the first on its network to join a group, or if the host is the last on its network to leave a group, the group's network membership record is updated in all gateways

Write the new feature if ipv6? 3marks ( p # 111 )
The new features of IPV6 are as follows:
• IPV6 addresses are 128 bits.
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• Header format is entirely different.
• Additional information is stored in optional extension headers, followed by data.
• Flow label and quality of service allows audio and video applications to establish appropriate connections.
• New features can be added more easily. So it is extensible.

Difference b/w explicit and implicit frame type? 3 marks ( p # 36 )

EXPLICIT FRAME TYPE:
In this type the identifying value is included with frame describes types of included data.

IMPLICIT FRAME TYPE:
In implicit frame the receiver must infer from frame data.

Characteristics of BGP? 5 marks ( on net )
_ Reliable transport protocol
_ Loop detection
_ CIDR support
_ Large routing table support
_ Policy-based routing

Question No: 21 ( Marks: 2 )

Is there a comparison between TCP/IP reference model and OSI reference model.
Both the TCP/IP and OSI are international standards for data communication. Both use the concept of protocol layering. These are the conceptual tools that is often used to show how various protocols and technologies fit together to implement networks. The functions that the model represents are much the same. This means that the TCP/IP and the OSI models are really quite similar in nature even if they don't carve up the network functionality pie in precisely the same way. There is a fairly natural correspondence between the TCP/IP and OSI layers; it just isn't always a “one-to-one” relationship. Since the OSI model is used so widely, it is common to explain the TCP/IP architecture both in terms of the TCP/IP layers and the corresponding OSI layers

Question No: 22 ( Marks: 2 )

How can a datagram be transmitted across a physical network that does not

understand the datagram format?
Encapsulate!

The network interface layer encapsulates an entire datagram in the data area of a hardware frame.
The network hardware ignores the datagram format.
The hardware treats a frame containing a datagram like any other frame.
The sender places a frame type in the frame header indicating that the frame contains a datagram.
The receiver reads the frame type and knows the frame contains a datagram.

Question No: 23 ( Marks: 2 )

What is the basic concept of Twice NAT (Network Address Translation)?

Twice NAT is another variant of NAT. it is used with site that runs server. In this process NAT box is connected to Domain Name.
Question No: 24 ( Marks: 3 )

Question No: 26 ( Marks: 3 )

Why does IPv6 use separate Extension Headers?

IPv6 use separate Extension Headers. Fragmentation information is kept in separate extension header. Each fragment has base header and (inserted) fragmentation header. Entire datagram including original header may be fragmented.

Question No: 27 ( Marks: 5 )
Consider the IP addresses: 178.200.127.5 and the corresponding subnet masks 255.255.255.0, then find out the following:
a. The number of bits used for subnetting (Answer 8 bits)
b. Total number of host in the subnet (Answer 254 )
= 2^8 = 256-2 = 254 ( 8 bits are used for host and -2 is used for broadcast and netwrok ID)
c. The network address of the subnet. (Answer 178.200.127.0)
d. The subnet address of the IP address.

Start by using 256, the subnet mask, which is 256-0=256. The first subnet is 8. The next subnet would be 16, then 24, and then 32. This host is in the 24 subnet, the broadcast address is 31, and the valid host range is 25 through 31. See Chapter 3 for more information on IP addressing.

The subnet mask determines what portion of the TCP/IP address represents your network and what portion can be used for your hosts. The network number represents the street I live on, and the host portion is used for the numbers on all the houses on my street.
A subnet mask of 255.255.255.0 means that the first three octets of the address will be used for the network, and thus our network number is192.168.1. This means we can have 254 computers on this network, because the fourth octet is not being used by the network portion of the address. We know this because of the 0 in the subnet mask (255.255.255.0).

Question No: 28 ( Marks: 5 )

How does IP software reassemble fragments that arrive out of order?
A unique ID number of each outgoing datagram

When a router fragments the datagram, the router copies the ID number into each fragment.
The fragment OFFSET field tells a receiver how to order fragments within a given datagram
The process of creating a copy of the original datagram from fragments is called reassembly.

Question No: 29 (Marks: 5)
Write down the comparison of Distance- vector and Link – state algorithm?
COMPARISON:
DISTANCE-VECTOR ROUTING:
• It is very simple to implement.
• Packet switch updates its own routing table first.
• It is used in RIP.
LINK-STATE ALGORITHM:
• It is much more complex.

• Switches perform independent computations.
• It is used in OSPF.

The table shows in the figure, how the class of address can be computed.

Question No: 31 ( Marks: 10 )

List down and describe atleast five charachteristics of Routing Information Protocol.

ROUTING INFORMATION PROTOCOL (RIP):
It has the following characteristics:
"It is used for routing within an autonomous system (IGP).
"Hop Count Metric: RIP measures distance in network hops, where each network
between the source and destination counts as a single hop.
"It uses UDP for all message transmissions.
"RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows
delivery via multicast.
"It can be used to advertise default route propagation. An organization can use RIP to
install a default route in each router.
"It uses distance vector algorithm.

**Question No: 40 ( Marks: 5 )**

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Describe how NAT can be usefull for residence with cable modem or DSL?

**Question No: 31 ( Marks: 2 )**
What are the advantages of a multipoint connection over a point-to-point connection?
**Answer:**
**Point-to-point connection is limited to two devices, where else more than two devices share a single link in multipoint connection. Multipoint connection can be used for fail-over and reliability.**
**Question No: 32 ( Marks: 2 )**
What's the name of the telephone service in which there is no need of dialing.
**Answer:**

**\DSS (digital data service) is the telephone service in which there is no need of dialing.**

**Question No: 33 ( Marks: 2 )**

Which type of frames are present in BSC frames?

**Answer:**

**There are two types of frames that are present in BSC.**

**1. Control Frames and**

**2. Data Frames**

**Question No: 34 ( Marks: 2 )**

**What methods of line discipline are used for peer to peer and primary secondary communication?**

**Answer:**

Line discipline is done in two ways:

1. ENQ/ACK (Enquiry Acknowledgement)

This is used for peer to peer communication.

2. Poll/ Select

This method is used for primary secondary communication.

**Question No: 35 ( Marks: 3 )**

**How does the checksum checker know that the received data unit is undamaged? [3]**

**Answer:**

Checksum Checker or generator:

The sender subdivides data units into equal segments of 'n' bits(16 bits)

1. These segments are added together using one's complement.

2. The total (sum) is then complemented and appended to the end of the original data unit as redundancy bits called CHECKSUM.

3. The extended data unit is transmitted across the network.

4. The receiver subdivides data unit and adds all segments together and complement the result.

5. If the intended data unit is intact, total value found by adding the data segments and the checksum field should be zero.

6. If the result is not zero, the packet contains an error & the receiver rejects it.

**Question No: 36 ( Marks: 3 )**

**Which one has more overhead, a repeater or a bridge? Explain your answer. [3]**

**Answer:**

A bridge has more overhead than a repeater. A bridge processes the packet at two layers ; a repeater processes a frame at only one layer. A bridge needs to search a table and find the forwarding port as well as to regenerate the signal; a repeater only regenerates the signal. In other words, a bridge is also a repeater (and more); a repeater is not a bridge.

**Question No: 37 ( Marks: 3 )**

**Write down disadvantages of Ring Topology.**

**Answer:**

Disadvantages of Ring Topology

Unidirectional Traffic

A break in a ring that is a disabled station can disable the entire network

Can be solved by using:
Dual Ring or
A switch capable of closing off the Break

**Question No: 38 ( Marks: 3 )**

**How parity bits are counted in VRC error detection method technique in case of odd parity generator?**

**Answer:**

For example:
We want to TX the binary data unit 1100001
Adding together the number of 1's gives us 3, an odd number Before TX, we pass the data unit through a parity generator, which counts the 1's and appends the parity bit (1) to the end The total number of 1's is now 4, an even number The system now transfers the entire expanded across the network link When it reaches its destination, the RX puts all 8 bits through an even parity checking function
If the RX sees 11100001, it counts four ones, an even number and the data unit passes
When the parity checker counts the 1's, it gets 5 an odd number The receiver knows that an error has occurred somewhere and therefore rejects the whole unit Some systems may also use ODD parity checking The principal is the same as even parity

**Question No: 40 ( Marks: 5 )**

**Explain Protocol Data Unit (PDU)?**

**Answer:** Protocol data unit (PDU) is an OSI term that refers generically to a group of information added or removed by a particular layer of the OSI model. In specific terms, an LxPDU implies the data and headers defined by layer x. Each layer uses the PDU to communicate and exchange information. The PDU information is only read by the peer layer on the receiving device and then stripped off, and data is handed over to the next upper layer.

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Both the TCP/IP and OSI are international standards for data communication. Both use the concept of protocol layering. These are the conceptual tools that is often used to show how various protocols and technologies fit together to implement networks. The functions that the model represents are much the same. This means that the TCP/IP and the OSI models are really quite similar in nature even if they don't carve up the network functionality pie in precisely the same way. There is a fairly natural correspondence between the TCP/IP and OSI layers; it just isn't always a "one-to-one" relationship. Since the OSI model is used so widely, it is common to explain the TCP/IP architecture both in terms of the TCP/IP layers and the corresponding OSI layers

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IPv6 use separate Extension Headers. Fragmentation information is kept in separate extension header. Each fragment has base header and (inserted) fragmentation header. Entire datagram including originalheader may be fragmented.

**Question No: 27 ( Marks: 5 )**

Consider the **IP** addresses: **178.200.127.5** and the corresponding **subnet masks 255.255.255.0,** then find out the following:

a. The number of bits used for subnetting (Answer **8 bits)**

b. Total number of host in the subnet (Answer **254 )**

c. The network address of the subnet. (Answer **178.200.127.0)**

d. The subnet address of the IP address.

**Here is the online calculator for subnetting**

**http://www.subnetmask.info/**

**http://www.subnet-calculator.com/subnet.php?net_class=B**

**NOTE. This is just for concept not included in the answer**

The subnet mask determines what portion of the TCP/IP address represents your network and what portion can be used for your hosts. The network number represents the street I live on, and the host portion is used for the numbers on all the houses on my street.
A subnet mask of **255.255.255.0** means that the first three octets of the address will be used for the network, and thus our network number is **192.168.1**. This means we can have **254** computers on this network, because the fourth octet is not being used by the network portion of the address. We know this because of the **0** in the subnet mask (255.255.255.**0**).

**Question No: 28 ( Marks: 5 )**

**How does IP software reassemble fragments that arrive out of order?**

A unique ID number of each outgoing datagram

- When a router fragments the datagram, the router copies the ID number into each fragment.
- The fragment OFFSET field tells a receiver how to order fragmentswithin a given datagram
- The process of creating a copy of the original datagram from fragments is called reassembly.

**Question No: 29 ( Marks: 5 )**

**Write down the comparison of Distance- vector and Link – state algorithm?**

COMPARISON:

**DISTANCE-VECTOR ROUTING:**

• It is very simple to implement.

• Packet switch updates its own routing table first.

• It is used in RIP.

**LINK-STATE ALGORITHM:**

• It is much more complex.

• Switches perform independent computations.

• It is used in OSPF.

**Question No: 30 ( Marks: 10 )**

Descibe in detail what is the purpose of the following table? What sort of information can be extracted?

The table shows in the figure, how the class of address can be computed.

**Question No: 31 ( Marks: 10 )**

**List down and describe at least five characteristics of Routing Information Protocol.**

ROUTING INFORMATION PROTOCOL (RIP):

It has the following characteristics:

"It is used for routing within an autonomous system (IGP).

"Hop Count Metric: RIP measures distance in network hops, where each network

Between the source and destination counts as a single hop.

"It uses UDP for all message transmissions.

"RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows

delivery via multicast.

"It can be used to advertise default route propagation. An organization can use RIP to

install a default route in each router.

"It uses distance vector algorithm.

"RIP allows hosts to listen passively and update its routing table

**Question No: 21 ( Marks: 2 )**

**Does OSPF only share information within an area or does it allow communication between areas**?

OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area. It reduces overhead (less broadcast traffic). Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas, OSPF can scale to handle a larger number of routers than other IGPs.

**STATIC ROUTING:**

It is one of the forms of Internet routing. In Static routing, the table is initialized

When system boots and there is no further changes.

**DYNAMIC ROUTING:**

In dynamic routing the table is initialized when system boots. It includes routing

Software which learns routes and updates table. In this way continuous changes are

possible due to routing software.

**Question No: 25 ( Marks: 3 )**

**What is the first address in the block if one of the addresses is 140.120.84.24/20?**

**The first address in the block is 140.120.80.0/20**

WE can use the following short cut to find the first address

1. divide the prefix length into four groups(corresponding to the four bytes in an address) and find the number of 1s in each group
2. if the number of 1s in a group is 8 the corresponding byte in the first address is the same (no change)
3. If the number of 1s in the group is zero (no1s), the corresponding byte in the first address is 0
4. if the number of 1s in a group is between zero and eight, we keep the corresponding bits in that group

**Question No: 26 ( Marks: 3 )**

**Write three new features of IPV6.**

The new features of IPV6 are as follows:

• IPV6 addresses are 128 bits.

• Header format is entirely different.

• Additional information is stored in optional extension headers, followed by data.

• Flow label and quality of service allows audio and video applications to establish

Appropriate connections.

• New features can be added more easily. So it is extensible.

**Question No: 27 ( Marks: 5 )**

**What is the difference between an interior gateway protocol and an exterior gateway protocol? Name an example of each.**

**INTERIOR GATEWAY PROTOCOLS (IGPs):**

It is used among routers within autonomous system. The destinations lie within IGP.

**EXTERIOR GATEWAY PROTOCOLS (EGPs):**

It is used among autonomous systems. The destinations lie throughout Internet

**Question No: 28 ( Marks: 5 )**

**As the Internet grew, the original Classful addressing scheme became a limitation, what is the designed solution.**

**Question No: 29 ( Marks: 5 )**

**What are IPv6 ADDRESS NOTATION?**

**IPv6 ADDRESS NOTATION:**

128-bit addresses unwidely in dotted decimal; requires 16 numbers:

105.220.136.100.255.255.255.255.0.0.18.128.140.10.255.255

Groups of 16-bit numbers in hex separated by colons – colon hexadecimal (or colon hex).

69DC: 8864:FFFF: FFFF: 0:1280:8C0A:FFFF

Zero-compression – series of zeroes indicated by two colons

FF0C: 0:0:0:0:0:0:B1

FF0C::B1

IPv6 address with 96 leading zeros is interpreted to hold an IPv4 address.

**Question No: 30 ( Marks: 10 )**

**LIST SOME CHARACTERISTICS OF A CLIENT.**

**CHARACTERISTICS OF A CLIENT:**

The characteristics of a client are explained below:

"Client is an arbitrary application program.

"It becomes client temporarily.

"It can also perform other computations.

"It is invoked directly by the user.

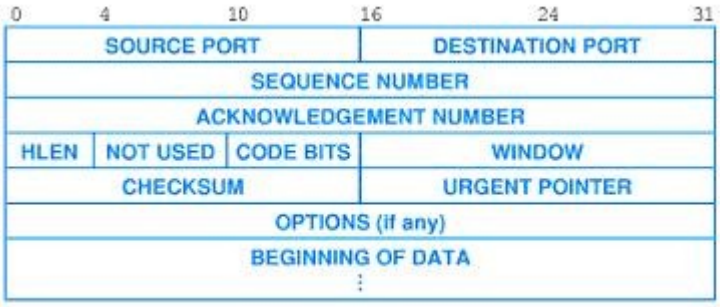
"It runs locally on the user's computer.

"It actively initiates contact with a server.

"It contacts one server at a time.

**Question No: 31 ( Marks: 10 )**

**With help of the diagram below, explain TCP Segment Format:**




TCP uses single format for all messages. TCP uses the term segment to refer to a message. Each message sent from TCP on onemachine to TCP on another machine uses this format including data andacknowledgement

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| Field Name | Size (bytes) | Description |
|---|---|---|
| ***SourcePort*** | 2 | ephemeral (client) port number**SourcePort:** The 16-bit port number of the process that originated the TCP segment on the source device. This will normally be an for a request sent by a client to a server |
| ***DestinationPort*** | 2 | ***DestinationPort:*** The 16-bit port number of the process that is |

| | | |
|---|---|---|
| | | the ultimate intended recipient of the message on the destination device. |
| ***Sequence Number*** | 4 | ***Sequence Number:*** For normal transmissions, the sequence number of the first byte of data in this segment. In a connection request (*SYN*) message, this carries the initial sequence number (ISN) of the source TCP. |
| ***Acknowledgment Number*** | 4 | ***Acknowledgment Number:*** When the *ACK* bit is set, this segment is serving as an acknowledgment (in addition to other possible duties) and this field contains the sequence number the source is next expecting the destination to send. |
| ***Window*** | 2 | ***Window:*** Indicates the number of octets of data the sender of this segment is willing to accept from the receiver at one time. This normally corresponds to the current size of the buffer allocated to accept data for this connection. |
| ***Checksum*** | 2 | 16-bit checksum for data integrity protection***Checksum:*** A , computed over the entire TCP datagram plus a special "pseudo header" of fields. It is used to protect the entire TCP segment against not just errors in transmission, but also errors in delivery. |
| ***Urgent Pointer*** | 2 | ***Urgent Pointer:*** Used in conjunction with the *URG* control bit for priority data transfer. This field contains the sequence number of the last byte of urgent data. |
| ***Options*** | Variable | ***Options***: TCP includes a generic mechanism for including one or more sets of optional data in TCP segment. Each of the options can be either one byte in length or variable length. The first byte if the option kind subfield and it's value specifies the type of option, which in turn indicates whether the option is just a single byte or multiple bytes. Options that are many bytes consist of three fields |

*Note this table is also included in options column. options may vary*

| **Subfield name** | **Size (bytes)** | **Description** |
|---|---|---|
| Option-kind | 1 | **Option-kind:** specifies the option type |
| Option-length: | 1 | **Option-length:** the length of the entire option in bytes, including the option-kind and option-length fields. |
| Option-data | Variable | **Option-data:** the option data itself in at least one oddbll case, this field is omitted(making option length equal to |

| | | |
|---|---|---|
| | | 2) |

## FINALTERM EXAMINATION

**ROUTING INFORMATION PROTOCOL (RIP):**

It has the following characteristics:

**"It is used for routing within an autonomous system (IGP).**

"Hop Count Metric: RIP measures distance in network hops, where each network

between the source and destination counts as a single hop.

"It uses UDP for all message transmissions.

"RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows

delivery via multicast.

"It can be used to advertise default route propagation. An organization can use RIP to

install a default route in each router.

"It uses distance vector algorithm.

What are the advantages of a multipoint connection over a point-to-point connection?
**Answer:**
**Point-to-point connection is limited to two devices, where else more than two devices share a single link in multipoint connection. Multipoint connection can be used for fail-over and reliability.**
**Question No: 32 ( Marks: 2 )**
What's the name of the telephone service in which there is no need of dialing.
**Answer:**

**DDS (digital data service) is the telephone service in which there is no need of dialing.**

**Question No: 33 ( Marks: 2 )**
Which type of frames are present in BSC frames?
**Answer:**
**There are two types of frames that are present in BSC.**
**1. Control Frames and**
**2. Data Frames**

**Question No: 34 ( Marks: 2 )**
**What methods of line discipline are used for peer to peer and primary secondary communication?**
**Answer:**
Line discipline is done in two ways:
1. ENQ/ACK (Enquiry Acknowledgement)
This is used for peer to peer communication.
2. Poll/ Select
This method is used for primary secondary communication.
**Question No: 35 ( Marks: 3 )**

**How does the checksum checker know that the received data unit is undamaged? [3]**
**Answer:**
Checksum Checker or generator:
The sender subdivides data units into equal segments of 'n' bits(16 bits)
1. These segments are added together using one's complement.
2. The total (sum) is then complemented and appended to the end of the original data unit as redundancy bits called CHECKSUM.
3. The extended data unit is transmitted across the network.
4. The receiver subdivides data unit and adds all segments together and complement the result.
5. If the intended data unit is intact, total value found by adding the data segments and the checksum field should be zero.
6. If the result is not zero, the packet contains an error & the receiver rejects it.
**Question No: 36 ( Marks: 3 )**
**Which one has more overhead, a repeater or a bridge? Explain your answer. [3]**
**Answer:**
A bridge has more overhead than a repeater. A bridge processes the packet at two layers ; a repeater processes a frame at only one layer. A bridge needs to search a table and find the forwarding port as well as to regenerate the signal; a repeater only regenerates the signal. In other words, a bridge is also a repeater (and more); a repeater is not a bridge.

**Question No: 37 ( Marks: 3 )**
**Write down disadvantages of Ring Topology.**
**Answer:**
Disadvantages of Ring Topology
Unidirectional Traffic
A break in a ring that is a disabled station can disable the entire network
Can be solved by using:
Dual Ring or
A switch capable of closing off the Break

**Question No: 38 ( Marks: 3 )**
**How parity bits are counted in VRC error detection method technique in case of odd parity**

**generator?**
**Answer:**
For example:
We want to TX the binary data unit 1100001
Adding together the number of 1's gives us 3, an odd number Before TX, we pass the data unit through a parity generator, which counts the 1's and appends the parity bit (1) to the end The total number of 1's is now 4, an even number The system now transfers the entire expanded across the network link When it reaches its destination, the RX puts all 8 bits through an even parity checking function
If the RX sees 11100001, it counts four ones, an even number and the data unit passes
When the parity checker counts the 1's, it gets 5 an odd number The receiver knows that an error has occurred somewhere and therefore rejects the whole unit Some systems may also use ODD parity checking The principal is the same as even parity

**Question No: 21 ( Marks: 2 )**

**Is there a comparison between TCP/IP reference model and OSI reference model**.

Both the TCP/IP and OSI are international standards for data communication. Both use the concept of protocol layering. These are the conceptual tools that is often used to show how various protocols and technologies fit together to implement networks. The functions that the model represents are much the same. This means that the TCP/IP and the OSI models are really quite similar in nature even if they don't carve up the network functionality pie in precisely the same way. There is a fairly natural correspondence between the TCP/IP and OSI layers; it just isn't always a "one-to-one" relationship. Since the OSI model is used so widely, it is common to explain the TCP/IP architecture both in terms of the TCP/IP layers and the corresponding OSI layers

**Question No: 22 ( Marks: 2 )**

**How can a datagram be transmitted across a physical network that does not understand the datagram format?**

**Encapsulate!**

- The network interface layer encapsulates an entire datagram in the data area of a hardware frame.
- The network hardware ignores the datagram format.
- The hardware treats a frame containing a datagram like any other frame.
- The sender places a frame type in the frame header indicating that the frame contains a datagram.
- The receiver reads the frame type and knows the frame contains a datagram.

**Question No: 23 ( Marks: 2 )**

**What is the basic concept of Twice NAT (Network Address Translation)?**

Twice NAT is another variant of NAT. it is used with site that runs server. In this process NAT box is connected to Domain Name.

**Question No: 26 ( Marks: 3 )**

**Why does IPv6 use separate Extension Headers?**

IPv6 use separate Extension Headers. Fragmentation information is kept in separate extension header. Each fragment has base header and (inserted) fragmentation header. Entire datagram including original header may be fragmented.

**Question No: 27 ( Marks: 5 )**

Consider the **IP** addresses: **178.200.127.5** and the corresponding **subnet masks 255.255.255.0,** then find out the following:

a. The number of bits used for subnetting (Answer **8 bits)**

b. Total number of host in the subnet (Answer **254 )**

c. The network address of the subnet. (Answer **178.200.127.0)**

d. The subnet address of the IP address.

**Here is the online calculator for subnetting**

**http://www.subnetmask.info/**

**http://www.subnet-calculator.com/subnet.php?net_class=B**

**NOTE. This is just for concept not included in the answer**

The subnet mask determines what portion of the TCP/IP address represents your network and what portion can be used for your hosts. The network number represents the street I live on, and the host portion is used for the numbers on all the houses on my street.
A subnet mask of **255.255.255.0** means that the first three octets of the address will be used for the network, and thus our network number is **192.168.1**. This means we can have **254** computers on this network, because the fourth octet is not being used by the network portion of the address. We know this because of the **0** in the subnet mask (255.255.255.**0**).

**Question No: 28 ( Marks: 5 )**

**How does IP software reassemble fragments that arrive out of order?**

A unique ID number of each outgoing datagram

- When a router fragments the datagram, the router copies the ID number into each fragment.
- The fragment OFFSET field tells a receiver how to order fragments within a given datagram
- The process of creating a copy of the original datagram from fragments is called reassembly.

**Question No: 29 ( Marks: 5 )**

**Write down the comparison of Distance- vector and Link – state algorithm?**

COMPARISON:

**DISTANCE-VECTOR ROUTING:**

• It is very simple to implement.

• Packet switch updates its own routing table first.

• It is used in RIP.

**LINK-STATE ALGORITHM:**

• It is much more complex.

• Switches perform independent computations.

• It is used in OSPF.

**Question No: 30 ( Marks: 10 )**

Descibe in detail what is the purpose of the following table? What sort of information can be extracted?

The table shows in the figure, how the class of address can be computed.

**Question No: 31 ( Marks: 10 )**

**List down and describe atleast five charachteristics of Routing Information Protocol.**

ROUTING INFORMATION PROTOCOL (RIP):

It has the following characteristics:

"It is used for routing within an autonomous system (IGP).

"Hop Count Metric: RIP measures distance in network hops, where each network

between the source and destination counts as a single hop.

"It uses UDP for all message transmissions.

"RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows

delivery via multicast.

"It can be used to advertise default route propagation. An organization can use RIP to

install a default route in each router.

"It uses distance vector algorithm.

"RIP allows hosts to listen passively and update its routing table

**FINALTERM**

**Question No: 22 ( Marks: 2 )**

**Does OSPF only share information within an area or does it allow communication between areas**?

OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area. It reduces overhead (less broadcast traffic). Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas, OSPF can scale to handle a larger number of routers than other IGPs.

**Question No: 24 ( Marks: 3 )**

**Describe the difference between static and dynamic routing?**

**STATIC ROUTING:**

It is one of the forms of Internet routing. In Static routing, the table is initialized

when system boots and there is no further changes.

**DYNAMIC ROUTING:**

In dynamic routing the table is initialized when system boots. It includes routing

software which learns routes and updates table. In this way continuous changes are

possible due to routing software.

**Question0 No: 25 ( Marks: 3 )**

**What is the first address in the block if one of the addresses is 140.120.84.24/20?**

**The first address in the block is 140.120.80.0/20**

WE can use the following short cut to find the first address

5. divide the prefix length into four groups(corresponding to the four bytes in an address) and find the number of 1s in each group
6. if the number of 1s in a group is 8 the corresponding byte in the first address is the same (no change)
7. If the number of 1s in the group is zero (no1s), the corresponding byte in the first address is 0
8. if the number of 1s in a group is between zero and eight, we keep the corresponding bits in that group

**Question No: 26 ( Marks: 3 )**

**Write three new features of IPV6.**

The new features of IPV6 are as follows:

• IPV6 addresses are 128 bits.

• Header format is entirely different.

• Additional information is stored in optional extension headers, followed by data.

• Flow label and quality of service allows audio and video applications to establish

Appropriate connections.

• New features can be added more easily. So it is extensible.

**Question No: 27 ( Marks: 5 )**

**What is the difference between an interior gateway protocol and an exterior gateway protocol? Name an example of each.**

**INTERIOR GATEWAY PROTOCOLS (IGPs):**

It is used among routers within autonomous system. The destinations lie within IGP.

**EXTERIOR GATEWAY PROTOCOLS (EGPs):**

It is used among autonomous systems. The destinations lie throughout Internet

**Question No: 29 ( Marks: 5 )**

**What are IPv6 ADDRESS NOTATION?**

**IPv6 ADDRESS NOTATION:**

128-bit addresses unwidely in dotted decimal; requires 16 numbers:

105.220.136.100.255.255.255.255.0.0.18.128.140.10.255.255

Groups of 16-bit numbers in hex separated by colons – colon hexadecimal (or colon hex).

69DC: 8864:FFFF: FFFF: 0:1280:8C0A:FFFF

Zero-compression – series of zeroes indicated by two colons

FF0C: 0:0:0:0:0:0:B1

FF0C::B1

IPv6 address with 96 leading zeros is interpreted to hold an IPv4 address.

**Question No: 30 ( Marks: 10 )**

**LIST SOME CHARACTERISTICS OF A CLIENT.**

**CHARACTERISTICS OF A CLIENT:**

The characteristics of a client are explained below:

"Client is an arbitrary application program.

"It becomes client temporarily.

"It can also perform other computations.

"It is invoked directly by the user.

"It runs locally on the user's computer.

"It actively initiates contact with a server.

"It contacts one server at a time.

**Question No: 31 ( Marks: 10 )**

Question No: 21 ( Marks: 2 )

What is the difference between the physical and logical topologies?

Every LAN has a topology, or the way that the devices on a network are arranged and how they communicate with each other.

PHYSICL 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.

Question No: 22 ( Marks: 2 )

Define Vector-Distance Algorithm.

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 ( Marks: 3 )

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 ( Marks: 3 )

How can Switched Virtual Network be established?

SWITCHED VIRTUAL CIRCUITS:

Most networks offer dynamic connections, which last for a relatively short time.

To handle this, ATM can dynamically establish a switched virtual circuit (SVC), allow it last as long as necessary and then terminate it.

The terminology comes from the Telco's where switching system normally refers to all switching.

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

Question No: 25 ( Marks: 5 )

How can a bridge know whether to forward frames?

The bridge builds a list of MAC addresses on either side of the bridge. Therefore, it knows which packets should be forwarded to the other side and which should not. Most bridges are self-learning bridges. As soon as a frame arrives to a bridge, it extracts a source address from its header and automatically adds it in the list for that segment. In this way a bridge builds up address lists.

In the example of a packet that uses a MAC address not in its table it can err on the side of caution by forwarding the packet.

Question No: 26 ( Marks: 5 )

Compare connection oriented and connectionless Service.

Connection-Oriented vs. Connectionless Service

This characteristic specifies whether conversations take place in a more or less structured manner. When using a connection-oriented protocol, you incur the overhead of setting up a virtual circuit (a defined communications path) between the sender and receiver, which is maintained until the sender and receiver have completed their entire conversation.

When the conversation is completed, you incur the overhead of tearing down the virtual circuit. Connection-oriented protocols provide guaranteed delivery of messages in the order in which they were sent.

Contrast this with Connectionless service, which does not require establishing a session and a virtual circuit. This can be found in the network layer or transport layer, depending on the protocol. You can think of a connectionless protocol as being akin to mailing a post card. You send it and hope that the receiver gets it. Common features of a connectionless service are:

• Packets do not need to arrive in a specific order

• Reassembly of any packet broken into fragments during transmission must be in

proper order

• No time is used in creating a session

• No Acknowledgement is required.

• The largest connectionless

***What is the main difference between TCP and UDP? (2)***

**TCP(Transmission Control Protocol).**

- TCP is a connection-oriented protocol.
- A connection can be made from client to server, and from then on any data can be sent along that connection.
- TCP Provide a Reliability due to connection oriented features.

**UDP(User Datagram Protocol).**

- A simpler message-based connectionless protocol.
- Messages (packets) can be sent across the network in chunks.
- UDP is Unreliable – as it could get lost on the way.

*Why TCP called end to end Protocol.....(2)*

TCP established connection between nodes before transmission or receiving the data, due to this feature, it is called end-to-end protocol.

*Why more preference given to TCP as comparative to UDP*

TCP provide reliability as it follows connection oriented protocol paradigm that is why TCP is given preference over UDP.

*How is TCP a reliable protocol? (Marks=2)*

- TCP is a connection-oriented protocol.
- A connection can be made from client to server, and from then on any data can be sent along that connection.
- TCP Provide a Reliability due to connection oriented features.

*The maximum payload of a TCP segment is 65,495 bytes. Why was such a strange number chosen?(3)*

A TCP segment must fit inside an IP packet. The TCP header is a fixed-format of 20- bytes, and the IP header is also 20 bytes long. Since the maximum length of an IPv4 packet is 65,535 bytes, this leaves only 65,535-20-20 = 65,495 bytes left for TCP payload.

*Why does UDP exist? Would it not have been enough to just let user processes send raw IP packets?(3)*

UDP instead of raw IP is used because the UDP header contains the port information for the source and destination machines. This allows the machines to know which processes the packet came from and should be sent to. This information is not available anywhere in the header for the raw IP packet. It would not have been enough to just let user processes send raw IP packets

### *Characteristics of UDP (5)*

UDP is connectionless protocol

- The sender isn't aware of the other party's status and send the data anytime it wants to.
- Real-time communication is possible.

The port number is marked on the data and the data is encapsulated to IP packet and sent.

- Reliability of communication is not guaranteed.
- Data can be lost.

### *Differentiate between UNICAST, MULTICAST AND BROADCAST (6)*

Three methods can be used to transmit packets over a network: unicast, multicast, and broadcast.

**Unicast** involves communication between a single sender and a single receiver. This is a type of point-to-point transmission; since the packet is transmitted to one destination at a time.

**Multicast** is used to send packets to a group of addresses, represented by a "group address." In this case, packets are transmitted from a single sender to multiple receivers. Since the same data packet can be sent to multiple nodes by sending just one copy of the data, the load of the sender and the overall load of the network are both reduced.

**Broadcast** involves sending packets to all nodes on a network simultaneously. This type of transmission is used to establish communication with another host, and for DHCP type methods of assigning IP addresses. In the first case, it's needed because your packets must know the proper MAC address to

send packets to a machine on your local network. Suppose you know the IP address (obtained, for example, by querying a DNS server), but have not yet determined the MAC address that belongs to the node. If you broadcast a packet that asks requests the identity of the node with that particular IP address, every machine on the network will receive the message, but only the one with that IP address will respond.

*Q5: Differentiate between connectionless and connection-oriented protocol? (6)*

**Connection-oriented**

- Requires a session connection (analogous to a phone call) be established before any data can be sent.
- This method is often called a "reliable" network service.
- It can guarantee that data will arrive in the same order.
- Connection-oriented services set up virtual links between end systems through a network.

**Connectionless**

- Does not require a session connection between sender and receiver.
- The sender simply starts sending packets (called data-grams) to the destination.
- This service does not have the reliability of the connection-oriented method, but it is useful for periodic burst transfers.
- Neither system must maintain state information for the systems that they send transmission to or receive transmission from.
- A connectionless network provides minimal services.

*Define special IP..(5)*

Special IP's are those IP's which are not assigned to any machine; these are reserve IP's, used for special purpose, for example:

| Prefix | Suffix | Type Of Address | Purpose |
|---|---|---|---|
| all-0s | all-0s | this computer | used during bootstrap |
| network | all-0s | network | identifies a network |
| network | all-1s | directed broadcast | broadcast on specified net |
| all-1s | all-1s | limited broadcast | broadcast on local net |
| 127 | any | loopback | testing |

*Routing information Protocol define briefly (10)*

The Routing Information Protocol (RIP) is a dynamic routing protocol used in local and wide area networks. As such it is classified as an interior gateway protocol (IGP). It uses the distance-vector routing algorithm. It was first defined in RFC 1058 (1988). The protocol has since been extended several times, resulting in RIP Version 2 (RFC 2453). Both versions are still in use today, however, they are considered to have been made technically obsolete by more advanced techniques such as Open Shortest Path First (OSPF) and the OSI protocol IS-IS. RIP has also been adapted for use in IPv6 networks, a standard known as RIPng (RIP next generation), published in RFC 2080 (1997).

**Features of RIP**

- Routing within an autonomous system (IGP)
- Hop count metric
- Unreliable transport (uses UDP)
- Broadcast or multicast delivery
- Default Route Propagation
- Distance vector algorithm
- Passive version for host

*What is OSPF.....(2)*

Open Shortest Path First (OSPF) is a dynamic routing protocol for use in Internet Protocol (IP) networks. Specifically, it is a link-state routing protocol and falls into the group of interior gateway protocols, operating within a single autonomous system (AS).

*What is mean by address resolution with centralization message exchange?*

A network includes one or more servers that are assigned the task of answering address resolution requests. It has an advantage that resolution is easier to configure, manage and control.

*To solve the problem the routers and networks in the internet are divided into groups, how large do you think are these groups? (Marks=2)*

There is no limit to determine the size of group, it can be large or small depends upon net work administrator.

*How does a packet pass across an internet? (Marks=3)*

- A source creates the packet and places the destination address in a packet header
- The packet is sent to the nearest router
- The router uses the destination address to select the next router on the path to the destination, and then transmits the packet.
- The packet reaches the router that can deliver the packet to its final destination.

*What are some of the metrics used by routing protocols? (Marks=3)*

Path length, reliability, delay, bandwidth, load, and communication cost

*What are the problem that IP does not guarantee and how to handle these problems? (Marks=3)*

IP does not guarantee the following problems:

- Delivery of packets
- Delivery of packets in sequence.

*How can Universal Services be achieved? (Marks=5)*

The goal of internetworking is universal service across heterogeneous networks. To provide this service all computers and routers must agree to forward information from a source on one network to a specified destination. The task is complicated as frame formats and addressing schemes may differ. The key of achieving universal service is universal protocol software (TCP/IP).

*What are the main advantages and disadvantages of Routing Information Protocol (RIP)? (Marks=5)*

**Advantages:**

* Simple to implement

* Low requirement in processing and memory at the nodes

* Suitable for small networks

**Disadvantages:**

* Slow convergence

* Bouncing effect

* Counting to infinity problem from Routing Basics, RIP

* Poor metrics. RIP only supports a hop count metric, with a maximum value of 15 hops.

*Can a router in the global internet use static routing the same way a host does? If so, how large is the routing table in a router? (Marks=10)*

The answers of these questions are complex. Although cases exit where a router uses static routing, most routers are using dynamic routing.

*How can we prove that we have 2,147,483,648 addresses in class A? (2)*

In class A, only 1 bit defines the class. The remaining 31 bits are available for the address. With 31 bits, we can have 231 or 2,147,483,648 addresses.

*Why is internet multicast routing difficult? (2)*

Internet multicast routing is difficult because internet multicast allows arbitrary computer to join multicast group at any time. It allows arbitrary member to leave multicast group at any time. It also allows arbitrary computer to send message to a group (even if not a member).

*Define what is the Extension Headers in IPv6. (2)*

In IPv6, optional internet-layer information is encoded in separate headers that may be placed between the IPv6 header and the upper- layer header in a packet. There are a small number of such extension headers, each identified by a distinct Next Header value. As illustrated in these examples, an IPv6 packet may carry zero, one, or more extension headers, each identified by the Next Header field of the preceding header:

If IPv4 is so successful, then why change IPv6? (5 marks)

Internet Protocol Version 6 (IPv6) is designed to increase Internet global address space to accommodate the rapidly increasing numbers of users and applications that require unique global IP addresses and help enable a global environment where the addressing rules of the network are again transparent to applications.

Write a note on IPv6 (marks 5)

Why does IPv6 use separate *Extension Headers*? (3)

There are two reasons:

1. Economy
2. Extensibility

What are IPv6 ADDRESS NOTATION? (5)

The standard notation for IPv6 addresses is to represent the address as eight 16-bit hexadecimal words separated by ``:'' (colons). For example:

FEDC:BA98:0332:0000:CF8A:000C:2154:7313

*Write three new features of IPV6. (3)*

- Expanded Addressing
  IP address size increases from 32 bits in IPv4 to 128 bits in IPv6, to support more levels of addressing hierarchy. In addition, IPv6 provides many more addressable IPv6 systems.

- Address Auto-configuration and Neighbor Discovery
- Header Format Simplification
- Improved Support for IP Header Options
- Application Support for IPv6 Addressing
- Additional IPv6 Resources

How does IP software reassemble fragments that arrive out of order? (3)

- The sender places a unique ID number in the Identification field of each outgoing datagram
- When a router fragments the datagram, the router copies the identification number into each fragment
- A receiver uses the identification number and the IP source address in the incoming fragment to determine the datagram to which the fragment belongs
- The Fragment Offset field tells a receiver how to order fragments within a datagram

A unique ID number of each outgoing datagram

When a router fragments the datagram, the router copies the ID number into each fragment.

The fragment OFFSET field tells a receiver how to order fragments within a given datagram

The process of creating a copy of the original datagram from fragments is called reassembly.

*What is the first address in the block if one of the addresses is 167.199.170.82/27? (3)*

The prefix length is 27, which means that we must keep the first 27 bits as is and change the remaining bits (5) to 0s. The following shows the process:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Address | in | binary: | | | 10100111 | 11000111 | 10101010 | 01010010 |
| Keep | the | left | 27 | bits: | 10100111 | 11000111 | 10101010 | 01000000 |

Result in CIDR notation: 167.199.170.64/27

*What is the first address in the block if one of the addresses is 140.120.84.24/20? (3)*

The prefix length is 20, which means that we must keep the first 20 bits as is and change the remaining bits (12) to 0s. The following shows the process:

| | |
|---|---|
| Address in binary: | 10001100 1111000 01010100 00011000 |
| Keep the left 20 bits: | 10001100 1111000 01010000 00000000 |
| Result in CIDR notation: | 140.120.80.0/27 |

*In internet routing how does a host join or leave a group? (3)*

A standard protocol exists that allows a host to inform a nearby router whenever the host needs to join or leave a particular multicast group known as Internet Group Multicast Protocol (IGMP). The computer uses IGMP to inform the local router about the last application when it leaves.

*What is the role of area in open shortest path first (OSPF)? (3)*

OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area. It reduces overhead (less broadcast traffic). Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas, OSPF can scale to handle a larger number of routers than other IGPs.

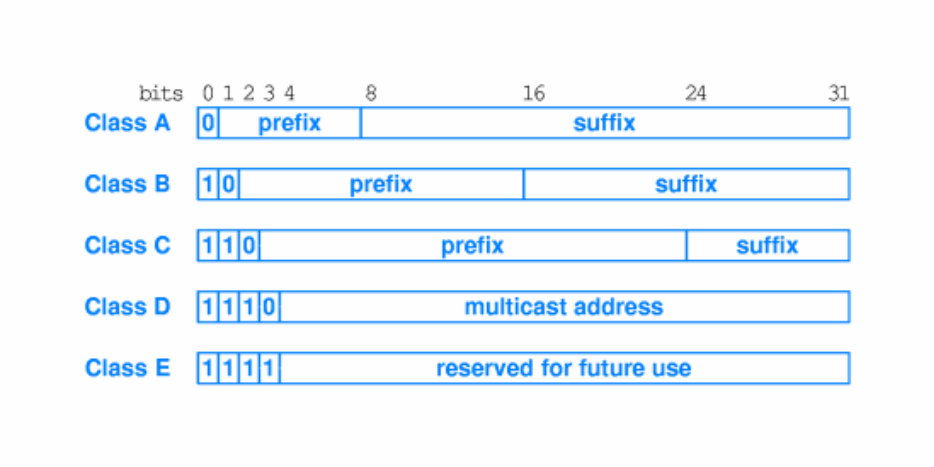
*Write a note on Address Resolution. (5)*

Mapping between a protocol address and a hardware address is called Address Resolution. A host or router uses address resolution when it needs to send a packet to another computer on the same physical network. A computer never resolves the address of a computer that attaches to a remote network.

*What is the concept of classes for IP Addresses? Briefly describe each class (10)*

The original IP address scheme divides host addresses into three primary classes. The class of an address determines the boundary between the network prefix and suffix.

The original classes of IP addresses are shown in the figure below.




*What is address resolution? (2 marks)*

Mapping between a protocol address and a hardware address is called Address Resolution. A host or router uses address resolution when it needs to send a packet to another computer on the same physical network. A computer never resolves the address of a computer that attaches to a remote network.

*In IP datagram format, what does the field SERVICE TYPE do? (2 marks)*

SERVICE TYPE shows sender's preference for low latency, high reliability that is rarely used.

*What is stored in routing table? (3 marks)*

A routing table is used by TCP/IP network routers to calculate the destinations of messages it is responsible for forwarding. The table is a small in-memory database managed by the router's built-in hardware and software.

Routing Table Entries and Sizes

Routing tables contain a list of IP addresses. Each IP address identifies a remote router (or other network gateway) that the local router is configured to recognize. For each IP address, the routing table additionally stores a network mask and other data that specifies the destination IP address ranges that remote device will accept.

*What are implementations of NAT?* (3 marks)

The figure below shows the implementation of NAT. We can see that the old and new values of IP source field and destination field are shown with their directions.

| Direction | Field | Old Value | New Value |
|---|---|---|---|
| out | IP Source | 10.0.0.1 | 128.10.24.6 |
| in | IP Destination | 128.10.24.6 | 10.0.0.1 |

NAT device stores state information in table. The value is entered in the table when NAT box receives outgoing datagram from new

*Why organizations don't use a single router to connect its entire network? (3)*

Organization seldom uses a single router to connect its entire network for two reasons.

- Because the router must forward each packet, the processor in a given router is insufficient to handle the traffic.
- Redundancy improved Internet reliability.

*What are the characteristic of border gateway protocol? (5 marks)*

The characteristics of BGP follow:

- BGP is an exterior gateway protocol (EGP) used in routing in the Internet. It is an inter-domain routing protocol.
- BGP is a path vector routing protocol suited for strategic routing policies.
- BGP uses TCP Port 179 to establish connections with neighbors.
- BGPv4 implements CIDR.
- eBGP is for external neighbors. It's used between separate autonomous systems.
- iBGP is for internal neighbors. It's used within an AS.
- BGP uses several attributes in the routing-decision algorithm.
- BGP uses confederations and route reflectors to reduce BGP peering overhead.
- The MED (metric) attribute is used between autonomous systems to influence inbound traffic.
- Weight is used to influence the path of outbound traffic from a single router, configured locally.

*As the Internet grew, the original Classful addressing scheme became a limitation. What were the new design goals to overcome this limitation? (5 marks)*

As the Internet grew, the original Classful addressing scheme became a limitation.

The IP address space was being exhausted because all networks had to choose one of three possible sizes. Many addresses were unused.

Two new mechanisms were invented to overcome the limitations, which are as follows:

• Subnet addressing

• Classless addressing

Instead of having three distinct address classes, allow the division between prefix and suffix to occur on an arbitrary boundary. The classless addressing scheme solves the problem by allowing an ISP to assign a prefix that is, 28 bits long (allowing the host to have up to 14 hosts).

An ISP has class C classful address 193.214.11.0. If this ISP has 3 customers each with 6 computers. Then what addresses will be assigned to those three customers by using classless addressing? (10 marks)

Is there a comparison between TCP/IP reference model and ISO reference model? (2)

TCP/IP reference model have internet layer whereas ISO reference do not have internet layer.

Does OSPF only share information within an area or does it allow communication between areas? (2)

OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area. It reduces overhead (less broadcast traffic). Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas, OSPF can scale to handle a larger number of routers than other IGPs.

*What are the implementations of Network Address Translation? (2)*

Implementations of NAT are available e.g.

• Stand-alone hardware device

• IP router with NAT functionality embedded

The figure below shows the implementation of NAT. We can see that the old and new values of IP source field and destination field are shown with their directions.

| Direction | Field | Old Value | New Value |
|---|---|---|---|
| out | IP Source | 10.0.0.1 | 128.10.24.6 |
| in | IP Destination | 128.10.24.6 | 10.0.0.1 |

NAT device stores state information in table. The value is entered in the table when NAT box receives outgoing datagram from new

*Describe the difference between static and dynamic routing? (3)*

- **Static routing** is configured by the network administrator. It is not capable of adjusting to changes in the network without network administrator intervention.
- **Dynamic routing** adjusts to changing network circumstances by analyzing incoming routing update messages without administrator intervention.

What is the difference between an interior gateway protocol and an exterior gateway protocol? Name an example of each. (5)

**INTERIOR GATEWAY PROTOCOLS (IGPs):**

It is used among routers within autonomous system. The destinations lie within IGP.

Examples are: RIP, IGRP, EIGRP, and OSPF.

**EXTERIOR GATEWAY PROTOCOLS (EGPs):**

It is used among autonomous systems. The destinations lie throughout Internet

Example of EGP is Broader Gateway Protocol (BGP) . BGP is the recommended backbone peering protocol because it is:

- Industrial Standard.
- Scalable
- Best practice
- Non-Proprietary
- Flexible

As the Internet grew, the original Classful addressing scheme became a limitation, what is was the designed solution. (5)

As the Internet grew, the original Classful addressing scheme became a limitation. The IP address space was being exhausted because all networks had to choose one of three possible sizes. Many addresses were unused. Two new mechanisms were invented to overcome the limitations, which are as follows:

• Subnet addressing

• Classless addressing

Instead of having three distinct address classes, allow the division between prefix and suffix to occur on an arbitrary boundary. The classless addressing scheme solves the problem by allowing an ISP to assign a prefix that is, 28 bits long (allowing the host to have up to 14 hosts).

LIST SOME CHARACTERISTICS OF A CLIENT. (10)

The characteristics of a client are explained below:

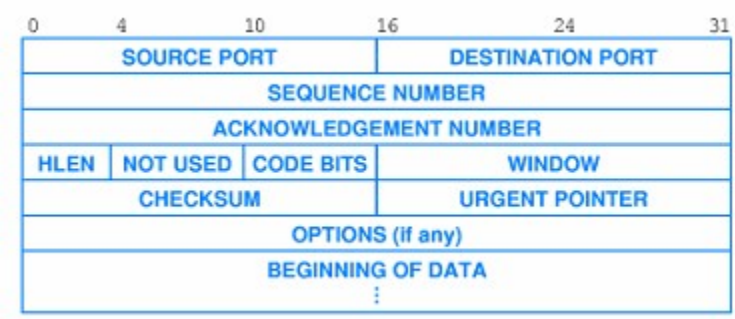
- "Client is an arbitrary application program.
- "It becomes client temporarily.
- "It can also perform other computations.
- "It is invoked directly by the user.
- "It runs locally on the user's computer.
- "It actively initiates contact with a server.
- "It contacts one server at a time.

CHARACTERISTICS OF A SERVER:

The characteristics of a server are explained below:

- "It is a special-purpose, privileged program.
- "It is dedicated to provide one service.
- "It can handle multiple remote clients simultaneously.
- "It invoked automatically when system boots.
- "It executes forever.
- "It needs powerful computer and operating system.
- "It waits for client contact.
- "It accepts requests from arbitrary clients.

With help of the diagram below, explain TCP Segment Format: (10)




- **Source Port:** The 16-bit port number of the process that originated the TCP segment on the source device.
- **Destination Port:** The 16-bit port number of the process that is the ultimate intended recipient of the message on the destination device.
- **Sequence Number:** For normal transmissions, the sequence number of the first byte of data in this segment. In a connection request (SYN) message, this carries the initial sequence number (ISN) of the source TCP.
- **Acknowledgment Number:** When the ACK bit is set, this segment is serving as an acknowledgment (in addition to other possible duties) and this field contains the sequence number the source is next expecting the destination to send
- **Data Offset:** Specifies the number of 32-bit words of data in the TCP header. In other words, this value times four equals the number of bytes in the header, which must always be a multiple of four. It is called a “data offset” since it indicates by how many 32-bit words the start of the data is offset from the beginning of the TCP segment.
- **Reserved:** 6 bits reserved for future use; sent as zero.
- **Control Bits:** TCP does not use a separate format for control messages instead certain bits are set for controlling communication.
- **Window:** Indicates the number of octets of data the sender of this segment is willing to accept from the receiver at one time.
- **Checksum:** A 16-bit checksum for data integrity protection, computed over the entire TCP datagram plus a special “pseudo header” of fields. It is used to protect the entire TCP segment against not just errors in transmission, but also errors in delivery. Optional alternate checksum methods are also supported.
- **Urgent Pointer:** Used in conjunction with the URG control bit for priority data transfer. This field contains the sequence number of the last byte of urgent data.
- **Options:** Set for other options
- **Padding:** If the Options field is not a multiple of 32 bits in length, enough zeroes are added to pad the header so it is a multiple of 32 bits.
- **Data:** The bytes of data being sent in the segment.

How can a datagram be transmitted across a physical network that does not understand the datagram format? (2)

The answer lies in a technique known as encapsulation. When an IP datagram is encapsulated in a frame, the entire datagram is placed in the data area of a frame.

- The network interface layer encapsulates an entire datagram in the data area of a hardware frame.
- The network hardware ignores the datagram format.
- The hardware treats a frame containing a datagram like any other frame.
- The sender places a frame type in the frame header indicating that the frame contains a datagram.
- The receiver reads the frame type and knows the frame contains a datagram.

"To achieve a hierarchy, OSPF allows an autonomous system to be partitioned for routing purposes". Does this feature make OSPF more complex or powerful? (3)

Consider the **IP** addresses: **178.200.127.5** and the corresponding **subnet masks 255.255.255.0,** then find out the following: (5)

a. The **number of bits** used for **subnetting**. (8-Bits)
b. Total **number of host** in the **subnet (254)**
c. The **network address** of the **subnet**. (178.200.127.0)
d. The **subnet address** of the **IP address.**

Here is the online calculator for subnetting

http://www.subnetmask.info/

http://www.subnet-calculator.com/subnet.php?net_class=B

Write down the comparison of Distance- vector and Link – state algorithm? (5)

**DISTANCE-VECTOR ROUTING:**

- • It is very simple to implement.
- • Packet switch updates its own routing table first.
- • It is used in RIP.

**LINK-STATE ALGORITHM:**

- • It is much more complex.
- • Switches perform independent computations.
- • It is used in OSPF.

Descibe in detail what is the purpose of the following table? What sort of information can be extracted? (10)

| First Four Bits Of Address | Table Index (in decimal) | Class of Address |
|---|---|---|
| 0000 | 0 | A |
| 0001 | 1 | A |
| 0010 | 2 | A |
| 0011 | 3 | A |
| 0100 | 4 | A |
| 0101 | 5 | A |
| 0110 | 6 | A |
| 0111 | 7 | A |
| 1000 | 8 | B |
| 1001 | 9 | B |
| 1010 | 10 | B |
| 1011 | 11 | B |
| 1100 | 12 | C |
| 1101 | 13 | C |
| 1110 | 14 | D |
| 1111 | 15 | E |

List down and describe atleast five charachteristics of Routing Information Protocol. (10)

It has the following characteristics:

1. "It is used for routing within an autonomous system (IGP).
2. "Hop Count Metric: RIP measures distance in network hops, where each network between the source and destination counts as a single hop.
3. "It uses UDP for all message transmissions.
4. "RIP is used over LAN. Version 1 of RIP uses hardware broadcast and version 2 allows delivery via multicast.
5. "It can be used to advertise default route propagation. An organization can use RIP to install a default route in each router.
6. "It uses distance vector algorithm.
7. "RIP allows hosts to listen passively and update its routing table

What make TCP reliable? Give one technique which makes it reliable (marks 10)

Why class A, B and C are called primary classes (marks 2)

*Importance of intelligent network*

*What will be the shortest possible path for secure communication.*

If physical layer not understand the datagram format, how data transmit.....(2)

Describe the process of routing packets.

Routing is the act of moving information across an internet work from a source to a destination.

What are some routing algorithm types?

Static, dynamic, flat, hierarchical, host-intelligent, router-intelligent, intra-domain, inter-domain, link-state, and distance vector.

Why Three- way handshake is necessary for TCP communication and how three-way handshake occurs? 10

What are the characteristics of UDP? 5

UDP has the following characteristics.

- It is an end-to-end protocol. It provides application-to-application communication.
- It provides connectionless service.
- It is a Message-Oriented protocol.
- It uses best-effort delivery service.
- It follows arbitrary interaction.
- It is operating system independent.

In client -server interaction, if no signal is given, how can an application know when communication has arrived? (3)

One application actively begins execution first and another application waits passively at prearranged location. This process is called client-server interaction.

What is the concept of IP Address Hierarchy? 3

The IP address hierarchy guarantees two important principles:

1. Each computer is assigned a unique address.
2. Although network number assignment must be coordinated globally, suffixes can be assigned locally.

How ICMP can be used to trace a route? 3

List of all routers on path from A to B is called the route from A to B. The intermediate routers send ICMP time exceeded message to the source and destination sends an ICMP destination unreachable message to the source.

Tracert (Windows version) sends ICMP echo messages with increasing TTL. Router that decrements TTL to 0 sends ICMP time exceeded message, with router's address as source address. First, with TTL 1, gets to first router, which discards and sends time exceeded message. Next, with TTL 2 gets through first router to second router. It continues until an ICMP echo reply message from destination is received.

What is meant by the Client-Server Paradigm? (2)

It is used by all network applications. The passive program is called a server and the active program is called a client.

Find the class of each address:

a. 00000001 00001011 00001011 11101111

b. 11000001 10000011 00011011 11111111

c. 10100111 11011011 10001011 01101111

d. 11110011 10011011 11111011 00001111

Solution

a. The first bit is 0. This is a class A address.

b. The first 2 bits are 1; the third bit is 0. This is a class C address.

c. The first bit is 0; the second bit is 1. This is a class B address.

d. The first 4 bits are 1s. This is a class E address.

0 ~ 127 → Class A

128 ~ 191 → Class B

192 ~ 223 → Class C

224 ~ 239 → Class D

240 ~ 255 → Class E

Find the class of each address:

a. 227.12.14.87 b.193.14.56.22 c.14.23.120.8 d. 252.5.15.111 e.134.11.78.56

Solution

a. The first byte is 227 (between 224 and 239); the class is D.

b. The first byte is 193 (between 192 and 223); the class is C.

c. The first byte is 14 (between 0 and 127); the class is A.

d. The first byte is 252 (between 240 and 255); the class is E.

e. The first byte is 134 (between 128 and 191); the class is B.

Change the following IP addresses from binary notation to dotted-decimal notation.

a. 10000001 00001011 00001011 11101111

b. 11000001 10000011 00011011 11111111

c. 11100111 11011011 10001011 01101111

d. 11111001 10011011 11111011 00001111

Solution

We replace each group of 8 bits with its equivalent decimal number (see Appendix B) and add dots for separation:

a. 129.11.11.239

b. 193.131.27.255

c. 231.219.139.111

d. 249.155.251.15

Find the error, if any, in the following IP addresses:

a. 111.56.045.78

b. 221.34.7.8.20

c. 75.45.301.14

d. 11100010.23.14.67

Solution

a. There are no leading zeroes in dotted-decimal notation (045).

b. We may not have more than four numbers in an IP address.

c. In dotted-decimal notation, each number is less than or equal to 255; 301 is outside this range.

d. A mixture of binary notation and dotted-decimal notation is not allowed.

Is there a comparison between TCP/IP reference model and OSI reference model.

Both the TCP/IP and OSI are international standards for data communication. Both use the concept of protocol layering. These are the conceptual tools that is often used to show how various protocols and technologies fit together to implement networks. The functions that the model represents are much the same. This means that the TCP/IP and the OSI models are really quite similar in nature even if they don't carve up the network functionality pie in precisely the same way. There is a fairly natural correspondence between the TCP/IP and OSI layers; it just isn't always a “one-to-one” relationship. Since the OSI model is used so widely, it is common to explain the TCP/IP architecture both in terms of the TCP/IP layers and the corresponding OSI layers

**Question No: 1 ( Marks: 1 ) - Please choose one**

**No error detection scheme is perfect because transmission errors can affect the**

**additional information as well as the data.**

**_ True (Reference is given below)**

_ False

**Question No: 2 ( Marks: 1 ) - Please choose one**

**------ Program sends a message to a remote computer and reports whether the**

**computer responds.**

**_ Ping (P-11)**

_ Trace route

_ ICMP

_ Non of the given

**Question No: 3 ( Marks: 1 ) - Please choose one**

**---------- was especially concerned about the lack of high powered computers.**

**_ ARPA (Search by Internet) click here to see**

_ IEEE

_ EIA

_ Non of the given

**Question No: 4 ( Marks: 1 ) - Please choose one**

**The term -------- is used to denote the definition of a packet used with a specific type of network.**

_ Packet

**_ Frame (p-16)**

_ Data

_ None of the given

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**Question No: 5 ( Marks: 1 ) - Please choose one**

**Computer networks are often called ---------- because they use packet technology.**

_ Ethernet

_ Switch networks

**_ Packet networks (Search by Internet) Click Here to see**

_ None of the given

**Question No: 6 ( Marks: 1 ) - Please choose one**

**---------- have advantages arisen from the size and ease of computation.**

**_ CRC (p-20)**

_ Parity

_ Checksums

_ None of given

**Question No: 7 ( Marks: 1 ) - Please choose one**

**Most LANs that employ ring topology use an access mechanism known as-------**

_ CSMA/CD

_ CSMA/CA

**_ TOKEN PASSING (p-30)**

_ None of the given

**Question No: 8 ( Marks: 1 ) - Please choose one**

**IEEE LLC/SNAP header is --------, which is used to specify the type of data.**

**_ 8 octets (p-37)**

_ 8 bytes

_ 8 bits

_ None of the given

**Question No: 9 ( Marks: 1 ) - Please choose one**

**Formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.**

_ 10 Base 2

_ 10 Base 5

**_ 10 Base T (p-46)**

_ None of the given

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**Question No: 10 ( Marks: 1 ) - Please choose one**

**An interface for twisted pair Ethernet must have an _____ connector , and must generate signals according to the_____ specification.**

**_ RJ-45, 10 Base T (p-47)**

_ RJ-45, 10 Base 5

_ BNC, 10 Base 2

_ BNC, 10 Base T

**Question No: 11 ( Marks: 1 ) - Please choose one**

**A bridges function in the _____ layers(s).**

_ Physical (MAC)

_ Data link

**_ Network (not sure)**

_ Physical (MAC) and Data link

**Question No: 12 ( Marks: 1 ) - Please choose one**

**A Bridge can _____**

_ Filter a frame

_ Forward a frame

_ Extend a LAN

**_ Do all the above (p-50)**

**Question No: 13 ( Marks: 1 ) - Please choose one**

**A Bridge forwards or filters a frame by comparing the information in its address table to the frame's_____**

_ Layer 2 source address

_ Source node's physical address

**_ Layer 2 destination address (not sure)**

_ Layer 3 destination address

**Question No: 14 ( Marks: 1 ) - Please choose one**

**_____ computes shortest paths in a graph by using weights on edges as a measure of distance.**

_ Greedy algorithm

_ Distance vector algorithm

**_ Dijksta's algorithm (p-62)**

_ Non of the given

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**Question No: 15 ( Marks: 1 ) - Please choose one**

**_____ is used for audio and video, since these have predefined maximum data rates**

**_ Constant Bit Rate (CBR) service (p-71)**

_ Variable Bit Rate (VBR) service

_ Available Bit Rate (ABR) service

_ None of the given

**Question No: 16 ( Marks: 1 ) - Please choose one**

**Unlike Frame Relay and ATM, SMDS (Switched multi-megabit Data service) offers_____ .**

**_ Connectionless service paradigm (p-152)**

_ Connection oriented service paradigm

_ Both Connectionless and Connection-oriented service paradigm

_ None of the given

**Question No: 17 ( Marks: 1 ) - Please choose one**

**A network with throughput T and delay D has a total of _____ bit in transit at any time.**

_ T / D

**_ T x D (p-80)**

_ T + D

_ None of the given

**Question No: 18 ( Marks: 1 ) - Please choose one**

**ATM is designed to work on_____.**

_ Twisted Pair

_ Coaxial

_ Radio Frequency

**_ Fiber (p-32)**

**Question No: 19 ( Marks: 1 ) - Please choose one**

**Computers attached to an Ethernet use ------ in which a computer waits for the ether to be idle before transmitting a frame.**

**_ CSMA/CD (p-43)**

_ CSMA/CA

_ TOKEN PASSING

_ None of the given

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**Question No: 20 ( Marks: 1 ) - Please choose one**

**FDDI can transmits data at a rate of ----------**

**_ 100 million bits per second (p-31)**

_ 10 million bits per second

_ 1000 million bits per second

_ None of the given

**Question No: 1 ( M a r k s: 1 )**

**In Point-to-Point topology there are two topologies.**

► Tree and Ring

► Star and Ring

► **Star and Tree** (Reference is given below)

► None of the given

*In Point-to-Point topology there are two topologies.*

*1) STAR topology 2) TREE topology*

**Question No: 2 ( M a r k s: 1 )**

**------ Program sends a message to a remote computer and reports whether the computer responds.**

- **Ping** (Reference is given below)

► Traceroute

► ICMP

► Non of the given

*Ping program tests reach ability. It sends datagram from B to A, that echoes back to B. it uses ICMP echo request and echo reply messages.*

**Question No: 3 ( M a r k s: 1 )**

**----- has no way to determine the cause of the problem.**

► ICMP

- **Ping** (Reference is given below)

► Trace route

► Non of the given

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*Ping has no way to determine the cause of the problem. Tracing A Route Network administrators use another tool, trace route.*

**Question No: 4 ( M a r k s: 1 )**

**The term----- ------- refers to the general concept of a small block of data**

- **Packet** (Reference is given below)

► Frame

► Data

► None of the given

*Packet is a generic term that refers to small block of data. Packet have different format.*

*Each hardware uses different packet format.*

**Question No: 5 ( M a r k s: 1 )**

**---------- scheme, which is designed to help detect transmissions errors, send one extra bit of information with each character**

- **Parity** (Reference is given below)

► Checksums

► CRC

► None of given

*A parity scheme, which is designed to help detect transmission errors, sends one extra hit of information with each character. Although it allows receiver to determine if a single bit has been changed parity can not detect transmission errors that change an even number of bits.*

**Question No: 6 ( M a r k s: 1 )**

**Local Talk is a LAN technology that employs ----------**

- **Bus topology** (Reference is given below)

► Ring topology

► Star topology

► None of the given

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*LOCAL TALK:*

*Apple invented the LAN technology that uses bus topology. Its interface is included with all Macintosh computers.*

**Question No: 7 ( M a r k s: 1 )**

**Most LANs that employ ring topology use an access mechanism known as-------**

► CSMA/CD

► CSMA/CA

► **TOKEN PASSING** (Reference is given below)

► None of the given

*Most LANs that employ ring technology use an access mechanism known as token passing. A token ring operates as a single, shared medium. When a computer wants to send data, it must wait until it obtains the token, when it is in control of the ring*

**Question No: 8 ( M a r k s: 1 )**

**Ethernet uses a ------ bit static addressing scheme in which each device is assigned a unique address by the manufacturer.**

► 64

► 48 (Reference is given below)

► 32

► 8

*Ethernet uses a 48-bit static addressing scheme*

**Question No: 9 ( M a r k s: 1 )**

**Formally named _____ informally known as the thick wire Ethernet or Thick net.**

► 10 Base 2

► **10 Base 5** (Reference is given below)

► 10 Base T

► None of the given

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*Thick Ethernet, officially known as 10 Base 5, is the oldest form of Ethernet. It was originally developed in the late 1970's by Digital Equipment Corporation, IBM, and Xerox, and became an international standard (IEEE 802.3) in 1983.*

*Taken from http://www.maznets.com/tech/10base-5.htm*

**Question No: 10 ( M a r k s: 1 )**

**Formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.**

► 10 Base 2

► 10 Base 5

► **10 Base T (Reference is given below)**

► None of the given

*twisted pair ethernet*

*Formally called 10 Base –T*

☐ *Also twisted pair Ethernet or simply TP Ethernet*

**Question No: 11 ( M a r k s: 1 )**

**The maximum size of an Ethernet segment is_____**

► 250 meters

► **500 meters** (Reference is given below)

► 700 meters

► None of the given

*One Ethernet cable is sometimes called a segment. This segment is limited to 500 meters in length. The minimum separation between connections is 3 meters. (P# 27)*

**Question No: 12 ( M a r k s: 1 )**

**A Bridge can _____**

► Filter a frame

► Forward a frame

► Extend a LAN

► **Do all the above** (Reference is given below)

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*A bridge is a hardware device also used to connect two LAN segments to extend a LAN. It listens to all traffic and recognizes frame format. It also forwards only correct complete*

*frames and discards the collided and error frames.*

*The most important task a bridge performs is frame filtering.*

**Question No: 13 ( M a r k s: 1 )**

**_____ computes shortest paths in a graph by using weights on edges as a measure of distance.**

► Greedy algorithm

► Distance vector algorithm

► **Dijksta's algorithm** (Reference is given below)

► Non of the given

*Dijkstras algorithm computes shortest paths in a graph by using weights on edg as a measure of distance. A path with the fewest number of edges may not be the path with least weight. (P# 173 e-books)*

**Question No: 14 ( M a r k s: 1 )**

**_____is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.**

► Constant Bit Rate (CBR) service

► **Variable Bit Rate (VBR) service** (Reference is given below)

► Available Bit Rate (ABR) service

► None of the given

*VARIABLE BIT RATE (VBR):*

*It is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.*

**Question No: 15 ( M a r k s: 1 )**

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**Basic LAN technologies such as Ethernet, Token Ring, and FDDI use a _____.**

► **Connectionless service paradigm** (Reference is given below)

► Connection-oriented service paradigm

► Both Connectionless and Connection-oriented service paradigm

► None of the given

*Basic LAN technologies such **as Ethernet, Token Ring, and FDDI use a** connectionless service paradigm. Although a computer needs to wait for access to a shared medium before sending a packet*

*(zh,vuzs,nov10)*

**Question No: 16 ( M a r k s: 1 )**

**The product of delay and throughput measures the _____ of data that can be present on the network.**

► Area

► Volume

► Length

► **None of the given** (Reference is given below)

*DELAY THROUPUT PRODUCT:*

*It is computed as delay time multiplied by effective throughput. It measures amount of data that can be present in the network (P# 80)*

**Question No: 17 ( M a r k s: 1 )**

**A network with throughput T and delay D has a total of _____ bit in transit at any time.**

► T / D

► **T x D** (Reference is given below)

► T + D

► None of the given

*A network with throughput T and delay D has a total of T x D bits in transit at any time. (e-books)*

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**Question No: 18 ( M a r k s: 1 )**

**One repeater _____, two repeaters _____ the maximum cable length limitation.**

- **doubles, triple** (Reference is given below)

► square roots, cude roots

► and, triple

► doubles, cancel

*One repeater doubles, two repeaters triple the maximum cable length limitation. (P# 49)*

**Question No: 19 ( M a r k s: 1 )**

**A network uses a ------ if all computers attach to a central point**

- **Star Topology** (Reference is given below)

► Ring Topology

► Bus Topology

► None of the given

*STAR TOPOLOGY:*

*In this topology, all computers are attached to a central point, which is sometimes called the "Hub" (P# 25)*

**Question No: 20 ( M a r k s: 1 )**

**Computers attached to an Ethernet use ------ in which a computer waits for the other to be idle before transmitting a frame.**

- **CSMA/CD** (Reference is given below)

► CSMA/CA

► TOKEN PASSING

► None of the given

*All computers attached to the Ethernet use CSMA/CD to co-ordinate their activities. A*

*computer wishing to transmit checks for electrical activity on the cable, informally called a carrier. If there is no carrier, the computer can transmit. If a carrier is present, the computer waits for the sender to finish before proceeding.*

**MIDTERM EXAMINATION**

## Delivered By: Waseem Jeetumoni Logic Khan

**Fall 2008**

**CS610- Computer Network (Session - 2)**

**Time: 60 min**

**Marks: 38**

**Question No: 1 ( Marks: 1 ) - Please choose one**

**A typical port on an ATM switch operates at _____ or higher.**

_ OC-2 speed (155Mbps)

_ OC-3 speed (100Mbps)

**_ OC-3 speed (155Mbps) (p-72)**

_ OC-3 speed (155Gbps)

**Question No: 2 ( Marks: 1 ) - Please choose one**

**The product of delay and throughput measures the _____ of data that can be present on the network.**

_ Area

_ Volume

_ Length

**_ None of the given (p-80)**

**Question No: 3 ( Marks: 1 ) - Please choose one**

**_____is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.**

___Constant Bit Rate (CBR) service

___**Variable Bit Rate (VBR) service (p-71)**

___Available Bit Rate (ABR) service

___None of the given

**Question No: 4 ( Marks: 1 ) - Please choose one**

**Which of the following is a connecting device?**

___Bridge

___Repeater

___Hub

___**All the given (p-54)**

**Question No: 5 ( Marks: 1 ) - Please choose one**

**A bridges function in the _____ layers(s).**

___Physical (MAC)

___Data link

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___**Network (not sure)**

___Physical (MAC) and Data link

**Question No: 6 ( Marks: 1 ) - Please choose one**

**IEEE LLC/SNAP header is --------, which is used to specify the type of data.**

___**8 octets (p-37)**

___8 bytes

___8 bits

___None of the given

**Question No: 7 ( Marks: 1 ) - Please choose one**

**The third field of the header consists of ------ bit Ethernet frame type.**

___48

___32

___16 (p-36)

___8

**Question No: 8 ( Marks: 1 ) - Please choose one**

**An ----------method, the network hardware designers specify how type information is included in the frame and the value use to identify various frame types.**

___Explicit frame type (not sure)

___Ideal frame type

___Implicit frame type

___None of the given

**Question No: 9 ( Marks: 1 ) - Please choose one**

**Local Talk is a LAN technology that employs ----------**

___Star topology

___Bus topology (p-30)

___Ring topology

___None of the given

**Question No: 10 ( Marks: 1 ) - Please choose one**

**The Fast Ethernet hardware operates at a rate of --------**

___10 Mbps

___100 Mbps (p-27)

___1000 Mbps

___None of the given

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**Question No: 11 ( Marks: 1 ) - Please choose one**

**---------- scheme, which is designed to help detect transmissions errors, send one extra bit of information with each character**

___Parity

___**Checksums (p-19)**

___CRC

___None of given

**Question No: 12 ( Marks: 1 ) - Please choose one**

**Computer networks are often called ---------- because they use packet technology.**

___Ethernet

___Switch networks

___**Packet networks** (repeated)

___None of the given

**Question No: 13 ( Marks: 1 ) - Please choose one**

**------ Program sends a message to a remote computer and reports whether the computer responds.**

___**Ping (p-11)**

___Traceroute

___ICMP

___Non of the given

**Question No: 14 ( Marks: 1 ) - Please choose one**

**In ---------, network occupies larger areas like cities & countries.**

___LAN

___**WAN (p-55)**

___MAN

___None of the given

**Question No: 15 ( Marks: 1 ) - Please choose one**

**In ----------, network occupies the smaller area like a room a floor or a building**

___**LAN (p-55)**

___WAN

___MAN

___None of the given

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**Question No: 16 ( Marks: 1 ) - Please choose one**

**In Point-to-Point topology there are two topologies.**

___Tree and Ring

___Star and Ring

**___Star and Tree (p-2)**

___None of the given

**MIDTERM EXAMINATION**

**Fall 2008**

**CS610- Computer Network (Session - 2)**

**Ref No: 109816**

**Time: 60 min**

**Marks: 38**

**Question No: 1 ( Marks: 1 ) - Please choose one**

**_____ has a jitter zero**

_ None of the given

_ Virtual Private Network

_ Isochronous Network

**_ Asynchronous Network (p-65)**

**Question No: 2 ( Marks: 1 ) - Please choose one**

**_Unlike Frame Relay and ATM, SMDS (Switched multi-megabit Data service)**

**offers_____ .**

**___Connectionless service paradigm (p-77)**

___Connection oriented service paradigm

___Both Connectionless and Connection-oriented service paradigm

___None of the given

**Question No: 3 ( Marks: 1 ) - Please choose one**

**_ATM assigns each VC a _____ identifier that is divided two parts to produce a hierarchy.**

___21-bit

___22-bit

___23-bit

**___24-bit (p-67)**

## Delivered By: Waseem Jeetumoni Logic Khan

**Question No: 4 ( Marks: 1 ) - Please choose one**

**_Most WAN systems include a mechanism that can be used to eliminate the common case of duplication routing is called_____**

___Hierarchal address

**___Default route (p-60)**

___Shortest path

___None of the given

**Question No: 5 ( Marks: 1 ) - Please choose one**

**_The next hop to which a packet is sent depends only on**

**___Packet's destination (p-102)**

___Packet's original source

___Path the packet has taken

___Non of the given

**Question No: 6 ( Marks: 1 ) - Please choose one**

**_An interface for twisted pair Ethernet must have an _____ connector , and must generate signals according to the_____ specification.**

**___RJ-45, 10 Base T (p-46)**

___RJ-45, 10 Base 5

___BNC, 10 Base 2

___BNC, 10 Base T

**Question No: 7 ( Marks: 1 ) - Please choose one**

**_When an application---------- data, it makes a copy of the data available to all other computers on the network.**

**___Broadcasting (p-53)**

___Multicasting

___Unicasting

___None of the given

**Question No: 8 ( Marks: 1 ) - Please choose one**

**_A ---------- provide a mechanism that a customer can use to set a physical address.**

___Static addressing scheme

**___Configurable addressing scheme (p-34)**

___Dynamic addressing scheme

___None of the given

**Question No: 9 ( Marks: 1 ) - Please choose one**

**_FDDI can transmits data at a rate of -----**

## Delivered By: Waseem Jeetumoni Logic Khan

**___100 million bits per second ----- (p-31)**

___100 million bits per second

___100 million bits per second

___100 million bits per second

___None of the given

**Question No: 10 ( Marks: 1 ) - Please choose one**

**_Computers attached to an ether use ------ in which a computer waits for the ether to be idle before transmitting a frame.**

**___CSMA/CD**

___CSMA/CA

___TOKEN PASSING

___None of the given

**Question No: 11 ( Marks: 1 ) - Please choose one**

**_---------- have advantages arisen from the size and ease of computation.**

___CRC

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**_The term -------- is used to denote the definition of a packet used with a specific type of network.**

___Packet

**___Frame (p-16)**

___Data

___None of the given

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**_------ has no way to determine the cause of the problem.**

**___Ping (p-11)**

___Trace route

___ICMP

___Non of the given

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**_------ Program sends a message to a remote computer and reports whether the computer responds.**

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**___Ping (p-11)**

___Traceroute

___ICMP

___Non of the given

**Question No: 15 ( Marks: 1 ) - Please choose one**

**_In ----------, network occupies the smaller area like a room a floor or a building**

**___LAN (p-55)**

___WAN

___MAN

___None of the given

**MIDTERM EXAMINATION**

Spring 2010

CS610- Computer Network

**Question No: 1 ( Marks: 1 ) - Please choose one**

In *Point-to-Point* topology there are two topologies.

- **Star and Tree (P-5)**
- Star and Ring
- Star and Bus
- None of the given

**Question No: 2 ( Marks: 1 ) - Please choose one**

------ Program sends a message to a remote computer and reports whether the computer responds.

- **Ping (p-11)**

- Traceroute
- ICMP

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- Non of the given

**Question No: 3 ( Marks: 1 ) - Please choose one**

------ has no way to determine the cause of the problem.

► ICMP

- Non of the given
- **Ping (p-11)**
- Trace route

**Question No: 4 ( Marks: 1 ) - Please choose one**

The term---------- refers to the general concept of a small block of data

- **Packet (p-16)**
- Frame
- Data
- None of the given

**Question No: 5 ( Marks: 1 ) - Please choose one**

---------- scheme, which is designed to help detect transmissions errors, send one extra

bit of information with each character□

- **Parity (p-18)**
- Checksums

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- CRC
- None of given

**Question No: 6 ( Marks: 1 ) - Please choose one**

Local Talk is a LAN technology that employs ----------

- **Bus topology (p-30)**
- Ring topology
- None of the given
- Star topology

**Question No: 7 ( Marks: 1 ) - Please choose one**

Most LANs that employ ring topology use an access mechanism known as-------

- CSMA/CD
- CSMA/CA
- **TOKEN PASSING (p-30)**
- None of the given

**Question No: 8 ( Marks: 1 ) - Please choose one**

Ethernet uses a ------ bit static addressing scheme in which each device is assigned a unique address by the manufacturer.

- 64
- **48 (p-98)**
- 32

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- 8

**Question No: 9 ( Marks: 1 ) - Please choose one**

Formally named _____ informally known as the thick wire Ethernet or Thick net.

- 10 Base 2
- 10 Base 5
- **10 Base T (p-40)**
- None of the given

**Question No: 10 ( Marks: 1 ) - Please choose one**

Formally named _____ informally known as the twisted pair Ethernet or TP

Ethernet.

- **10 Base 2 (p-46)**
- 10 Base 5
- 10 Base T
- None of the given

**Question No: 11 ( Marks: 1 ) - Please choose one**

The maximum size of an Ethernet segment is_____

- 250 meters
- **500 meters (p-27)**
- 700 meters
- None of the given

**Question No: 12 ( Marks: 1 ) - Please choose one**

A Bridge can _____

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- Filter a frame
- Forward a frame
- Extend a LAN
- **Do all the above (p-50)**

**Question No: 13 ( Marks: 1 ) - Please choose one**

_____ computes shortest paths in a graph by using weights on edges as a measure of distance.

- Greedy algorithm
- Distance vector algorithm
- **Dijksta's algorithm (p-62)**
- Non of the given

**Question No: 14 ( Marks: 1 ) - Please choose one**

_____is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.

► Constant Bit Rate (CBR) service

► **Variable Bit Rate (VBR) service (p-71)**

► Available Bit Rate (ABR) service

► None of the given

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**Question No: 15 ( Marks: 1 ) - Please choose one**

Basic LAN technologies such as Ethernet, Token Ring, and FDDI use a _____.

► **Connectionless service paradigm (p-77)**

► Connection-oriented service paradigm

► Both Connectionless and Connection-oriented service paradigm

► None of the given

**Question No: 16 ( Marks: 1 ) - Please choose one**

The product of delay and throughput measures the _____ of data that can be present on the network.

► Area

► Volume

► Length

► **None of the given (p-80)**

**Question No: 17 ( Marks: 1 ) - Please choose one**

A network with throughput T and delay D has a total of _____ bit in transit at any time.

► T / D

► **T x D (p-80)**

► T + D

- None of the given

**Question No: 18 ( Marks: 1 ) - Please choose one**

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One repeater _____, two repeaters _____ the maximum cable length limitation.

- **doubles, triple (p-49)**
- square roots, cude roots
- and, triple
- doubles, cancel

**Question No: 19 ( Marks: 1 ) - Please choose one**

A network uses a ------ if all computers attach to a central point

- **Star Topology (p-25)**
- Ring Topology
- Bus Topology
- None of the given

**Question No: 20 ( Marks: 1 ) - Please choose one**

Computers attached to an Ethernet use ------ in which a computer waits for the ether to be idle before transmitting a frame.

- **CSMA/CD (p-28)**
- CSMA/CA
- TOKEN PASSING
- None of the given

**MIDTERM EXAMINATION**

**Fall 2008**

**CS610- Computer Network (Session - 2)**

## Delivered By: Waseem Jeetumoni Logic Khan

**Ref No: 109816**

**Time: 60 min**

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►22-bit

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►**24-bit (p-67)**

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►CRC

►Parity

► **Checksums (p-19)**

►None of given

**Question No: 12 ( Marks: 1 ) - Please choose one**

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► Frame (p-16)

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► Ping (p-11)

►Trace route

►ICMP

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------ Program sends a message to a remote computer and reports whether the computer responds.

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►Traceroute

►ICMP

►Non of the given

**Question No: 15 ( Marks: 1 ) - Please choose one**

In ----------, network occupies the smaller area like a room a floor or a building

► LAN (p-55)

►WAN

►MAN

►None of the given

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**Question No: 21 ( Marks: 2 )**

**What is the difference between the physical and logical topologies?**

Every LAN has a topology, or the way that the devices on a network are arranged and how they communicate with each other.

**PHYSICL 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.

**Question No: 22 ( Marks: 2 )**

**Define Vector-Distance Algorithm**.

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

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and record distance as distance from next hop to destination plus distance from this switch to next hop.

**Question No: 23 ( Marks: 3 )**

**What is the concept of store and forward technology?**

**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 ( Marks: 3 )**

**How can Switched Virtual Network be established?**

**SWITCHED VIRTUAL CIRCUITS:**

Most networks offer dynamic connections, which last for a relatively short time.

To handle this, ATM can dynamically establish a switched virtual circuit (SVC), allow it last as long as necessary and then terminate it.

The terminology comes from the Telco's where switching system normally refers to all switching.

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

**Question No: 25 ( Marks: 5 )**

**How can a bridge know whether to forward frames?**

The bridge builds a list of MAC addresses on either side of the bridge. Therefore, it knows which packets should be forwarded to the other side and which should not. Most bridges are self-learning bridges. As soon as a frame arrives to a bridge, it extracts a source address from its header and automatically adds it in the list for that segment. In this way a bridge builds up address lists.

In the example of a packet that uses a MAC address not in its table it can err on the side

of caution by forwarding the packet.

**Question No: 26 ( Marks: 5 )**

**Compare connection oriented and connectionless Service.**

**Connection-Oriented vs. Connectionless Service**

This characteristic specifies whether conversations take place in a more or less structured manner. When using a connection-oriented protocol, you incur the overhead of setting up a virtual circuit (a defined communications path) between the sender and



receiver, which is maintained until the sender and receiver have completed their entire conversation.

When the conversation is completed, you incur the overhead of tearing down the virtual circuit. Connection-oriented protocols provide guaranteed delivery of messages in the order in which they were sent.

Contrast this with Connectionless service, which does not require establishing a session and a virtual circuit. This can be found in the network layer or transport layer, depending on the protocol. You can think of a connectionless protocol as being akin to mailing a post card. You send it and hope that the receiver gets it. Common features of a connectionless service are:

• Packets do not need to arrive in a specific order

• Reassembly of any packet broken into fragments during transmission must be in proper order

• No time is used in creating a session

• No Acknowledgement is required.

• The largest connectionless network in use today is the Internet

**Question No: 21 ( Marks: 2 )**

**What is the difference between LAN and WAN?**

Local area network (LAN)

LAN is small in size covers the area within a room, building or cities.

Wide area network (WAN)

WAN is large in size and covers the area cities, countries and continents.

**Question No: 22 ( Marks: 2 )**

**Define the term Jitter.**

The term Jitter is used for variance in transmission delays. Jitter is significance for voice, video and data. Jitter can occur when a packet is delayed because the network is busy.

**Question No: 23 ( Marks: 3 )**

**Give a comparison of wiring Schemes.**

Thick Ethernet wiring scheme.

This 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.

Thin Ethernet wiring scheme.

Thin Ethernet uses thin coax cable that is cheaper and easier to install than thick Ethernet coax. In thin ethernet wiring scheme transceiver electronics are built into NIC and NIC connect directly to network medium. Coax cable use connector on NIC. Coax runs directly to back of each connected computer by T-connector. The T-connector directly attaches to NIC.

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**How can Switched Virtual Network be established?**

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ATM can dynamically establish a switched virtual circuit SVC that allows it as long as necessary and then terminate it. The computer sends a connection request to the switch to which it is attached. Software in the switch finds a path to the destination and sends with 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 than a message is given back to the originating computer to indicate the SVC is ready.

**Question No: 25 ( Marks: 5 )**

**Describe permanent virtual circuits (PVC).**

ATM can provide the virtual circuits that look like traditional leased digital circuits. The permanent virtual circuits PVC works as long as the customer pays the periodic fee for its use. The forwarding table enter configured the terms used by Telco Provisioning requires two steps. To determine a complete path.

To choose appropriate VPI/VCI for each step in the path and configures each adjacent pair of switches.

**Question No: 26 ( Marks: 5 )**

**What are default routes, draw the table.**

Routing table entries can collapse with a default route. If destination doesn't have in explicit routing table entry and then it use a default route. It is shown in the below table.

Destination Next

hop

Destination Next

hop

Destination Next

hop

Destination 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

Node 1 Node 2 Node 3 Node 4

**Question No: 19 ( Marks: 3 )**

**Why 10-base T wiring scheme is called star shaped bus wiring scheme.**

The main feature of twisted pair Ethernet is that it forms a classic star topology

however functions like a bus. 10Base-T Ethernet is often called a star shaped bus.

Question No: 20 ( Marks: 5 )

What are the main factors due to which mechanism of error detections schemes differ?

Question No: 21 ( Marks: 10 )

How much data can be present on an original Ethernet segment at one time? To find out,

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compute the delay-throughput product. The original Ethernet operate at 10 mega bits per second, and a segment was limited to 500 meters. Assume the signals propagate down the cable at 66 percent of the speed of light.\

One Ethernet cable is sometimes called a segment. This segment is limited to 500 meters in length. The minimum separation between connections is 3 meters.

**Question No: 20 ( Marks: 5 )**

**_Which type of information is obtained from network sniffer and in which mode Network sniffer operates?**

Solution:

A network analyzer also called network monitor or a network sniffer is used to

examine the performance of or debug a network. It can report statistics such as capacity utilization, distribution of frame size, collision rate or token circulation time

Most installations still use DIX Ethernet encoding in which there is no LLC/SNAP header in the frame. A network analyzer can tell from the values in the type field (small values are lengths, which mean an LLC/SNAP header is located in the first octets of the data area; large values are types, which mean no LLC/SNAP header is included).

The operation of network analyzer is a computer with a network interface that receives all frames, which is called promiscuous mode. So many desktop computers have interface that can be configured for promiscuous mode. When combined with software computer can examine any frame on LAN. In this way the communication across LAN is guaranteed to be private. Computer receives and displays frames on the LAN. Network analyzer can be configured to filter and process frames. It can count frames of specific type of size. It displays only frames from or to specific computers.

**Question No: 21 ( Marks: 10 )**

---

**Thick Ethernet, Thin Ethernet and Twisted pair Ethernet.**

Solution:-

**Thick Ethernet:**

Thick Ethernet, officially known as 10 Base-5, is the oldest form of Ethernet.

One form of cabling supported by Ethernet is low-loss 50 Ohm coaxial cable as shown in the figure below. This type of cable is 0.5" diameter (usually supplied with a yellow outer PVC coating) and rather inflexible. It has become known in the communications industry as "Thick Ethernet". The official name for this cable is 10 Baseband5 (10B5), indicating that it is specified for baseband communications at 10 Mbps over distances up to 500m.

**Thin Ethernet:**

Thin Ethernet, officially called 10 Base-2, is a less expensive version of 10 Base-

5 (Thick Ethernet) technologies. It uses a lighter and thinner coaxial cable and dispenses with the external transceivers used with 10 Base-5.

10 Base-2 uses an RG-58A/U coaxial cable and is wired in a bus topology. Each device on the network is connected to the bus through a BNC "T" adapter, and each end of the bus must have a 50 Ohm terminator attached. Each node on the bus must be a minimum of 0.5 meters (1.5 feet) apart, and the overall length of the bus must be less than 185 meters (606 feet).

**Twisted Pair Ethernet**:

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Twisted Pair Ethernet (10baseT), sometime also called "UTP" from "Unshielded Twisted Pair", is based on using a cable similar to phone-wiring. The cable is connected via RJ-45 connectors to the network card installed in the PC.

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A network analyzer also called network monitor or a network sniffer is used to examine the performance of or debug a network. It can report statistics such as capacity utilization,

distribution of frame size, collision rate or token circulation time

Most installations still use DIX Ethernet encoding in which there is no LLC/SNAP header in the frame. A network analyzer can tell from the values in the type field (small values are lengths, which mean an LLC/SNAP header is located in the first octets of the data area; large values are types, which mean no LLC/SNAP header is included).

The operation of network analyzer is a computer with a network interface that receives all frames, which is called promiscuous mode. So many desktop computers have interface that can be configured for promiscuous mode. When combined with software computer can examine any frame on LAN. In this way the communication across LAN is guaranteed to be private. Computer receives and displays frames on the LAN.

Network analyzer can be configured to filter and process frames. It can count frames of specific type of size. It displays only frames from or to specific computers.

**Question No: 21 ( Marks: 10 )**

Thick Ethernet,

Thin Ethernet and Twisted pair Ethernet.

**Solution:-**

**Thick Ethernet:**

Thick Ethernet, officially known as 10 Base-5, is the oldest form of Ethernet.

One form of cabling supported by Ethernet is low-loss 50 Ohm coaxial cable as shown in the figure below. This type of cable is 0.5" diameter (usually supplied with a yellow outer PVC coating) and rather inflexible. It has become known in the communications industry as "Thick Ethernet". The official name for this cable is 10 Baseband5 (10B5), indicating that it is specified for baseband communications at 10 Mbps over distances up to 500m.

**Thin Ethernet:**

Thin Ethernet, officially called 10 Base-2, is a less expensive version of 10 Base-5 (Thick Ethernet) technologies. It uses a lighter and thinner coaxial cable and dispenses with the

external transceivers used with 10 Base-5.

10 Base-2 uses an RG-58A/U coaxial cable and is wired in a bus topology. Each device on the network is connected to the bus through a BNC "T" adapter, and each end of the bus must have a 50 Ohm terminator attached. Each node on the bus must be a minimum of 0.5 meters (1.5 feet) apart, and the overall length of the bus must be less than 185 meters (606 feet).

## Delivered By: Waseem Jeetumoni Logic Khan

**Twisted Pair Ethernet:**

Twisted Pair Ethernet (10baseT), sometime also called "UTP" from "Unshielded Twisted Pair", is based on using a cable similar to phone-wiring. The cable is connected via RJ-45 connectors to the network card installed in the PC.

**Subject: routing**
**Routing of a packet from source to destination does not depend on source address of a packet. Sir, what whould be the advantages of this in-dependency. ?**
**0**
**-**
**Answer:-**
**Next hop to destination does not depend on source of packet. This phenomenon is called 'Source Independence'. It has several benefits. It allows fast and efficient routing.**
**Packet switch need not hove complete information about all destinations in spite it just has next hop so reduces total information and increases dynamic robustness. The network can continue to function even if topology changes without notifying entire network.**

**Subject: multicast**
**why the internet multicast routing is difficult?**
**0**
**-**
**Answer:-**
**Internet multicast routing is difficult because internet multicast allows arbitrary computer to join multicast group at any time. It allows arbitrary member to leave multicast group at any time. It also allows arbitrary computer to send message to a group (even if not a member).**

**Question:-:**
**Subject: collisions in network**
**Sir, can network be totally protected from collisions with the help of exponential back off?**
**0**
**-**
**Answer:-**

**EXPONENTIAL BACK OFF**
**It reduces likely hood of sequence of collision.**

**Subject: tcp/ip**
**TCP/IP supports different approaches of address resolution algorithm in a real environment. Sir, what are their names?**
**0**
**-**
**Answer:-**
**Address Resolution Techniques**
**Address resolution algorithms can be grouped into three basic categories:**
**• Table lookup**
**• Closed-form computation**
**• Message Exchange**

**Question:-:**
**Subject: NAT**
**Suppose an organization wants to share the transmission of multiple devices of its network with single publicly routable IP address. To achieve this goal it uses NAT. Sir it is requested to tell what would be the alternative of NAT. ??**
**0**
**-**
**Answer:-**
**NAPT (Network Address and Port Translation) or TCP Slicing**
**TWICE NAT**
**CAT**

**Question:-:**
**Subject: gateway**
**Reliability is the base need of communication systems but some gateway protocols are considered unreliable. Sir it is requested to convey us which gateway protocol is unreliable protocol for transportation of messages?**
**0**

**Answer:-**
**We have unreliable transmission in Routing Information Protocol (RIP).**

**Question:-:**
**Subject: ARP**
**Suppose in a computer network of multinational company, network administrator's system receives some ARP messages while communication with other system. Considering this scenario Sir it is requested to to tell how does system deal these incoming ARP messages?**
**0**

**Answer:-**
**When an ARP message arrives, the protocol specifies that the receiver must perform two basic steps.**
**First the receiver extracts the sender's addresses binding and checks to see if it is present in the cache. If not, it updates the cache.**

**The receiver examines the operation field of the message to determine whether the message is a request or a response. If the message is a request, the receiver compares the field TARGET PADDR with the local protocol address. If the two are identical, the computer is the target of the request and must send an ARP response.**

**Question:-:**

**Subject: multicast**

**-**

**Answer:-**

**Several multicast protocols exist. Some of the proposed protocols are:**
**Distance Vector Multicast Routing Protocol (DVMRP)**
**Core Based Trees (CBT)**
**Protocol Independent Multicast_ Sparse Mode (PIM-SM)**
**Protocol Independent Multicast _ Dense Mode (PIM-DM)**
**Multicast Extensions to the Open Shortest Path First Protocol (MOSPF)**

**Question:-: 98**

**Subject: MULTICASTING**

**.**

**0**

**Answer:-**

**Several multicast protocols exist. Some of the proposed protocols are:**
**Distance Vector Multicast Routing Protocol (DVMRP)**
**Core Based Trees (CBT)**
**Protocol Independent Multicast_ Sparse Mode (PIM-SM)**
**Protocol Independent Multicast _ Dense Mode (PIM-DM)**
**Multicast Extensions to the Open Shortest Path First Protocol (MOSPF)**

**Question:-: 97**

**Subject: ROUTING**

**Routing is a key feature of networking because it can perform more complex analysis to determine the optimal path for the packet and eventually reach the target machine. What is meant of source independence in routing and how it can be valuable for routing?**

**0**

**Answer:-**

**Next hop to destination does not depend on source of packet. This phenomenon is called 'Source Independence'. It has several benefits. It allows fast and efficient routing.**
**Packet switch need not hove complete information about all destinations in spite it just has next hop so reduces total information and increases dynamic robustness. The network can continue to function even if topology changes without notifying entire network.**

**Question:-: 96**

**Subject: MULTIPLE TECHOLOGIES**

**write multiple technologies in networking field where change in routing table can happen frequently; does a router in the global Internet can still use static routing?**

**0**

**Answer:-**
**Imagine a small organization that is a customer of only an ISP. (Not have multiple internet connections), All traffic leaving the customer's site through router must travel to the ISP. Because route never changes, the routing table in router of customer can be static.**

**Question:-:**
**Subject: IP DATAGRAM**
**IP datagram format is same as a hardware frame format. Can network engineer change the size of IP datagram header?(**
**0**

**Answer:-**
**No, IP datagram format is not same as hardware frame format. Network engineer can't change the size of header because header area is usually fixed size.**

**Question:-: 94**
**Subject: CLIENT SERVER**
**In Client-Server interaction, if no signal is given, how cans an application has arrived?**
**0**
**-**
**Answer:-**
**Instead for waiting for an arbitrary message to arrive, an application that accepts communication must interact with protocol software before an external source attempts to communicate.**

**Question:-: 93**
**Subject: PROTOCOL**
**Which protocol is used that can hold data in buffer in both directions sent and received both?**
**0**
**-**
**Answer:-**
**This service is provided by Transmission Control Protocol (TCP). In TCP a connection can be used to carry data in both directions, that is, it is "full duplex".**

**Question:-: 92**
**Subject: MULTICAST ROUTING**
**What are multicast routing protocols?**
**0**
**-**
**Answer:-**
**A standard protocol exists that allows a host to inform a nearby router whenever the host needs to join or leave a particular multicast group known as Internet Group Multicast Protocol (IGMP).**
**Several multicast protocols exist. Some of the proposed protocols are:**
**Distance Vector Multicast Routing Protocol (DVMRP)**
**Core Based Trees (CBT)**
**Protocol Independent Multicast_ Sparse Mode (PIM-SM)**
**Protocol Independent Multicast _ Dense Mode (PIM-DM)**
**Multicast Extensions to the Open Shortest Path First Protocol (MOSPF)**

**Question:-: 91**

**Subject: IPV6**

**What is Extension Header in Ipv6 and why they use?**

**0**

**-**

**Answer:-**

**The control information in IPv6 packets is subdivided into a mandatory fixed header and optional extension headers. Extension headers carry optional Internet Layer information, and are placed between the fixed header and the upper-layer protocol header.**

**Question:-: 89**

**Subject: MULTICAST ROUTING**

**why the Internet Multicast Routing is difficult ?**

**0**

**-**

**Answer:-**

**Internet multicast routing is difficult because internet multicast allows arbitrary computer to join multicast group at any time. It allows arbitrary member to leave multicast group at any time. It also allows arbitrary computer to send message to a group (even if not a member).**

**Bottom of Form**

**tudent's Message: 88**

**Subject: MTU**

**If IP datagrams are larger than MTU which mechanism will be used to handle it by the routers?**

**0**

**-**

**Answer:-**

**IP uses fragmentation i.e. datagrams can be split into pieces to fit in network with small MTU.**
**Router detects datagram larger than network MTU and then it splits into pieces and each piece is smaller than outbound network MTU. Router has local MTU to compute size of each fragment. It puts part of data from original datagram in each fragment and puts other information into header.**

**Question:-: 87**

**Subject: ip header**

**Which field is used to add options into IP header?**

**0**

**-**

**Answer:-**

**Several options can be added in IP options field.**

**Question:-: 86**

**Subject: protocol**

**Which protocol is used that can hold data in buffer in both directions sent and received both? 2**

**0**

**-**

**Answer:-**

**TCP uses window mechanism to control the flow of data. The amount of buffer space available at any time is called the window and a notification that specifies the size is called the window advertisement.**

**Question:-: 85**

**Subject: tcp**

**What TCP mechanism will be used for reliable transmission and which term is used to manage lost packets?**

**0**

**-**

**Answer:-**

**TCP achieves reliability by retransmission. An acknowledgement is used to verify that data has arrived successfully. If acknowledgement does not arrive, the previous data is retransmitted.**

**Question:-: 84**

**Subject: tcp**

**Which TCP process will be used to troubleshoot the network having remote sit connected to multiple sites?**

**0**

**-**

**Answer:-**

**The Internet Control Message Protocol (ICMP) is one of the core protocols of the Internet Protocol Suite. It is used by the operating systems of networked computers to send error messages indicating, for example, that a requested service is not available or that a host or router could not be reached. ICMP can also be used to test different tools. An Internet host A, is reachable from another host B, if datagrams can be delivered from A to B. Ping program tests reachability. It sends datagram from B to A, which echoes back to B. it uses ICMP echo request and echo reply messages. Internet layer includes code to reply to incoming ICMP echo request messages.**

**Question:-: 83**

**Subject: TROUBLESHOTING**

**SIR,**

**WHICH TOPOLOGY IS BETTER FOR AUTOMATIC TROUBLESHOOTING??**

**0**

**-**

**Answer:-**

**FDDI (Fiber Distributed Data Interconnect) is better for automatic troubleshooting.**

**Question:-: 82**

**Subject: TROUBLESHOTTING**

**What protocol is used for Network Troubleshooting. ?**

**0**

**-**

**Answer:-**

**ICMP is used for this purpose.**

**Question:-: 81**

**Subject: ROUTING TABLE**

**Why EGP does not use Routing Matric?**

**0**

**-**

**Answer:-**

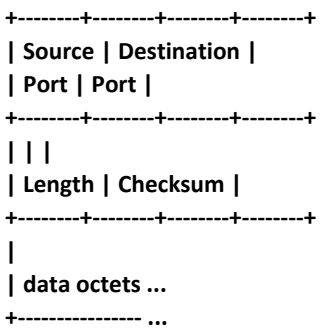
**EGPs do not use routing matrices because**

**EGP does not attempt to choose an optimal path.**

**The EGP just finds path.**
**An EGP cannot make meaningful comparison for optimal route.**

**Question:-: 80**
**Subject: LAN/WAN**
**If systems are far away then what is best choice (LAN/WAN). ?**
**0**
**-**
**Answer:-**
**WAN is the best choice in this case.**

**Question:-: 79**
**Subject: UDP**
**What is the main purpose of UDP with a real time example.**
**0**
**-**
**Answer:-**
**UDP is the first of the transport protocols in TCP/IP protocol suite. UDP protocol allows applications on the computers to send and receive datagrams. UDP has a packet format. It uses best-effort delivery service.**
**User Datagram Protocol (UDP) is a protocol used for transport of data across an Internet Protocol (IP) based network. User Datagram Protocol (UDP) does not perform handshaking as TCP does, or check for errors, or even to see if the transmitted data was received, so User Datagram Protocol (UDP) is referred to as an unreliable, connectionless protocol. However, because User Datagram Protocol (UDP) skips the handshaking and is focused on pure transmission, User Datagram Protocol (UDP) has lower overhead and is thus faster than TCP. UDP will provide better throughput on a network where the physical and datalink layer protocols are reliable.**
**Domain Name Service, Trivial File Transfer Protocol and Simple Network Management Protocol all use User Datagram Protocol (UDP).**
**A User Datagram Protocol (UDP) datagram is encapsulated within an IP datagram and therefore is prefixed with IP header information.**




**Question:-: 78**
**Subject: EGP**
**What gateway protocol mostly used as EGP with some properties.**
**0**
**-**
**Border Gateway Protocol (BGP) is most popular Exterior Gateway Protocol in Internet. It has following characteristics:**

**• It provides routing among autonomous systems (EGP).**
**• It provides policies to control routes advertised.**
**• It uses reliable transport (TCP).**
**• It gives path of autonomous systems for each destination.**
**• Currently the EGP is of choice in the Internet.**
**• It provides facilities for Transit Routing.**

**Question:-: 77**
**Subject: DELAY**
**What type of Transport Protocol is used when Packet dropping is proffered than Delay.**
**0**
**-**
**Answer:-**
**UDP (User datagram protocol) is used in this case.**

**Question:-: 76**
**Subject: IP DATAGRAM**
**What is the right place in IP Datagram Header to add extra options?**
**0**
**-**
**Answer:-**
**Several options can be added in IP options field.**
**Subject: DELAY**
**Networking Components take sometime while forwarding data over network medium. Identify the type of delay**
**0**
**-**
**Answer:-**
**There are following types of delay:**
**PROPAGATION DELAY:**
**It defined as the time to travel across medium.**
**SWITCHING DELAY:**
**It is the time required for network component (hub, bridge, packet switch) to forward data.**
**ACCESS DELAY:**
**It is the time required to get control of medium (CSMA/CD, token).**
**QUEUING DELAY:**
**It is the time enquired in packet switches.**

**Question:-: 74**
**Subject: OSPF**
**Which characteristics OSPF have?**
**0**
**-**
**Answer:-**
**Following are the characteristics of Open Shortest Path First (OSPF):**
**1. To satisfy demand for a routing protocol that can scale to large organizations, the IETF devised an IGP known as the Open Shortest Path**
**First Protocol (OSPF).**
**2. OSPF allows subdivision of Autonomous System into areas.**

**3. The link status information is propagated within an area.**

**4. The routes are summarized before being propagated to another area.**

**5. It reduces overhead (less broadcast traffic).**

**6. Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas**

**7. OSPF can scale to handle a larger number of routers than other IGPs.**

**Question:-: 73**

**Subject: ARP**

**Network administrator receives some messages on his system. How does computer deal this incoming ARP messages?(**

**0**

**-**

**Answer:-**

**Following sequence of steps will be performed:**

**1. First the receiver extracts the sender's addresses binding and checks to see if it is present in the cache.**

**2. If not, it updates the cache.**

**3. The receiver examines the operation field of the message to determine whether the message is a request or a response.**

**4. If the message is a request, the receiver compares the field TARGET PADDR with the local protocol address.**

**5. If the two are identical, the computer is the target of the request and must send an ARP response.**

**Question:-: 72**

**Subject: tcp**

**How congestion is controlled by TCP?(**

**0**

**-**

**Answer:-**

**TCP uses a number of mechanisms to achieve high performance and avoid congestion collapse, where network performance can fall by several orders of magnitude. These mechanisms control the rate of data entering the network, keeping the data flow below a rate that would trigger collapse. They also yield an approximately max-min fair allocation between flows.**

**Acknowledgments for data sent, or lack of acknowledgments, are used by senders to infer network conditions between the TCP sender and receiver. Coupled with timers, TCP senders and receivers can alter the behavior of the flow of data. This is more generally referred to as congestion control and/or network congestion avoidance.**

**Modern implementations of TCP contain four intertwined algorithms: Slow-start, congestion avoidance, fast retransmit, and fast recovery (RFC 5681).**

**Question:-: 71**

**Subject: snuffer**

**What are the operations of network snuffer**

**0**

**-**

**Answer:-**

**The basic idea behind the operation of network analyzer (Network Sniffer) is a computer with a network interface that receives all frames, which is called promiscuous mode. Many desktop computers have interface that can be configured for promiscuous mode. When combined with software computer can**

**examine any frame on LAN. In this way the communication across LAN is guaranteed to be private. This computer receives and displays (but does not respond to) frames on the LAN. Network analyzer can be configured to filter and process frames. It can count frames of specific type of size. It displays only frames from or to specific computers. In general it can be configured to match any value of any field and capture only these frames meeting the filter specifications.**

**Question:-: 70**

**Subject: reachbility**

**How can we test any website for example www.vu.edu.pk is reachable or not?**

**0**

**-**

**Answer:-**

**This is done through PING command for probing the Internet.**

**Question:-: 69**

**Subject: protocol**

**which protocol is used within organization.? Which protocol is used to handle traffic in computer network over countries?**

**0**

**Answer:-**

**An autonomous system can be thought of as a set of networks and routers under one administrative authority (organization). Interior Gateway Protocol (IGP) is used among routers within autonomous system (organization). Following are the Internet routing protocols:**
**Border Gateway protocol**
**Routing Information Protocol**
**Open Shortest Path First Protocol**
**For secure data communication in an organization Virtual Private Network (VPN) is used.**

- 

Permalink Reply by maria mcs on July 24, 2013 at 12:16pm

**Current Final Term Paper**
**Total Questions = 52**
**Total Marks = 80**
**Total 1 Mark MCQ = 40**
**Total 2 Marks Short Questions = 4**
**Total 3 Marks Short Questions = 4**
**Total 5 Marks Long Questions = 4**
**1. _____was especially most concerned about lack of highly powered computer.**
**a) ARPA**
**b) IEEE**
**c) EIA**
**d) PTA**
**2. _____has no way to determine the cause of problem**
**a) ICMP**
**b) ARP**
**c) Ping**

**d) Traceroute**
**3. Ethernet standard specifies that frame was sent using the _____**
**a) Manchester encoding**
**b) Non return to zero**
**c) Return to zero**
**d) Differential Manchester**
**4. Computer attached to Ethernet use _____ in which a computer waits the other to be idle before transmitting a frame**
**a) CSMA/CD**
**b) CSMA/CA**
**c) Token ring**
**2 marks question**
**41: Network classified by size?**
**Answer: LAN**
**WAN**
**42: As IT student do you think that common networking tool such as Ping will work with IPv6?**
**43: Which NAT variant fails if application uses IP Address instead of Domain? 2 marks**
**Answer: twice NAT**
**44: why multicasting for internet is difficult? Page 142**
**Answer: Internet multicast routing is difficult because internet multicast allows arbitrary computer to join multicast group at any time. It allows arbitrary member to leave multicast group at any time. It also allows arbitrary computer to send message to a group (even if not a member).**
**3marks question**
**45: Make Network of 7 computers. Which is best suitable topology if demand is that the network must be centrally manageable? Justify it with 4 possible advantages.**
**46: IPv6 notation?**
**47: Packet lost. How to overcome such traffic situation? Consequence face if it is not resumed carefully? Page 128**
**Answer: The goal of congestion control is to avoid adding retransmissions to an already congested network. Reducing the window size quickly in response to the lost messages does it. It is assumed that loss is due to congestion.**
**We have to resume carefully. Otherwise the network will swing wildly between congestion and under utilization.**
**48: Reason. Which Gateway protocol has characteristics of unreliable transport?**
**Answer: RIP has characteristics of unreliable transport. And reason is because it uses UDP. Page138**
**5 marks question**
**49: which approach of error detection is able to detect more errors as compared to others? Considering that there should be no increase in the size of information being transmitted. Explain how it works?**
**50: Assume a multinational organization has very large computer network across the country. Network engineer is given a task to configure a protocol to manage routing information in this network. In this scenario which protocol will be configured? Briefly explain proper reason.**
**Answer: BGP is best for large network across country. Reasons are its characteristics. Page 138**
**51: In real world, usually private IP address interacts with global internet. In this situation, discuss which type of device will be used to handle the traffic. Explain working with proper steps.**
**52: Reliability is responsibility of which layer in TCP/IP. Which protocol is designed to provide reliable transport service and why reliability is needed? Page 123**
**Answer: THE NEED FOR RELIABLE TRANSPORT:**
**Reliability is fundamental in a computer system. Software in the Internet must provide the same level of reliability as a computer system. Software must guarantee prompt and reliable communication without any loss, duplication, and change in the order.**
**TRANSMISSION CONTROL PROTOCOL:**

**Reliability is the responsibility of the Transport layer. In TCP/IP, TCP provides reliable transport service. Most Internet applications use TCP as no other protocol has proved to work better.**

**SERVICE PROVIDED BY TCP:**

**Following are the services provided by TCP:**

- **Connection-oriented service**
- **Point-to-point**
- **Complete reliability**
- **Full-duplex communication**
- **Stream interface**
- **Reliable connection startup**
- **Graceful connection shutdown**

**Question: What is 10base T?**

**Solution:**

**An Ethernet standard for cable. The 10 refers to its 10 Mbps bandwidth, the base to single channel baseband, and the T to Twisted pair. The cable uses two pairs of unshielded twisted wires**

**10BASE-T:**

**This is another standard of wiring scheme. It is commonly called 10Base-T, Twisted Pair or TP Ethernet. It replaces AUI cable with twisted pair cable and thick coax with hub. This makes it cheaper and that 's why it is most useful technology of today. It is shown in the figure below:**

**Ethernet over twisted pair refers to the use of cables that contain insulated copper wires twisted together in pairs for the physical layer of an Ethernet network—that is, a network in which the Ethernet protocol provides the data link layer.**

**Question: What is Multicasting?**

**Solution:**

**Multicast is communication between a single sender and multiple receivers on a network.**

**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. If an application program wishes to receive certain frames then it program the interface hardware to accept an additional set of addresses.**

**Question: What is FDDI?**

**Solution:**

**FDDI: 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.**

**The Fiber Distributed Data Interface (FDDI) specifies a 100-Mbps tokenpassing, dual-ring LAN using fiber-optic cable. FDDI is frequently used as**

**high-speed backbone technology because of its support for high bandwidth and greater distances than copper.**

**FDDI uses a dual-ring architecture with traffic on each ring flowing in opposite directions (calledcounter-rotating). The dual-rings consist of a**

**primary and a secondary ring. During normal operation, the primary ring is used for data transmission, and the secondary ring remains idle.**

**Question: Define 802.11 Wireless lans and CSMA?**

**Solution:**

**802.11 and 802.11x refers to a family of specifications developed by the IEEEfor wireless LAN (WLAN) technology. 802.11 specifies an overthe-air interface between a wireless client and a base station or between two wireless clients.**

**802.11 WIRELESS LANs AND CSMA/CA: 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.**

**CSMA/CA: Wireless uses collision avoid ness rather than collision detection. Transmitting computer sends very short message to receiver. Receiver responds with short message reserving slot for transmitter. The response from receiver is broadcast, so all potential transmitters receive reservation.**

**Question: Define Static & Dynamic Routing 2 Marks**

**Question: Dijkart's Algorithm 2 Marks**

**Solution:**

**COMPUTING SHORTEST PATH IN A GRAPH:**

**While computing shortest path, first we assume graph representation of network at each node then we use Djikstra's algorithm to compute shortest path from each node to every other node. Then extract next hop information from resulting path information and insert next hop information into routing tables. WEIGHTED GRAPH:**

**Djikstra'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).**

**Question: Write note on Bridges 5 Marks**

**Question: Disadvantages of Repeaters 3 Marks**

**Solution:**

**DISADVANTAGES OF REPEATERS:**

**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**

**Solution:**

**ATM CELLS:**

**To meet its goals, ATM uses small, fixed sized packets called cells. Each cell has 53 octets. VPI/VCI fields identify the cells destination.**

**CONCEPT OF 'PACKET':**

**Network systems divide data in small blocks or junks called packets, which they send individually.**

Question No: 1 ( M - 1 ) .
In Point-to-Point topology there are two topologies.
► Star and Tree
► Tree and Ring
► Star and Ring
**► Star and Tree**
► None of the given

In *Point-to-Point* topology there are two topologies.

1) STAR topology

2) TREE topology
Question No: 2 ( M - 1 ) .
------ Program sends a message to a remote computer and reports whether the computer responds.
**► Ping**
► Traceroute
► ICMP
► Non of the given

Ping program tests reach ability. It sends datagram from B to A, that echoes back to B. it uses ICMP echo request and echo reply messages.

Question No: 3 ( M - 1 ) .
------ has no way to determine the cause of the problem.
► ICMP
**► Ping**

► Trace route

► Non of the given
Ping has no way to determine the cause of the problem. Tracing A Route Network administrators use another tool, trace route.

Question No: 4 ( M - 1 ) .
The term----- ------- refers to the general concept of a small block of data
**► Packet**
► Frame
► Data
► None of the given
Packet is a generic term that refers to small block of data. Packet have different format. Each hardware uses different packet format.

Question No: 5 ( M - 1 ) .
---------- scheme, which is designed to help detect transmissions errors, send one extra bit of information with each character

► Parity
► Checksums
► CRC
► None of given

A parity scheme, which is designed to help detect transmission errors, sends one extra hit of information with each character. Although it allows receiver to determine if a single bit has been changed parity can not detect transmission errors that change an even number of bits.

Question No: 6 ( M - 1 ) .
Local Talk is a LAN technology that employs ----------
► Bus topology
► Ring topology
► Star topology

► None of the given

LOCAL TALK:

Apple invented the LAN technology that uses bus topology. Its interface is included with all Macintosh computers.

Question No: 7 ( M - 1 ) .
Most LANs that employ ring topology use an access mechanism known as-------
► CSMA/CD
► CSMA/CA
► TOKEN PASSING
► None of the given

Most LANs that employ ring technology use an access mechanism known as *token passing*. A token ring operates as a single, shared medium. When a computer wants to send data, it must wait until it obtains the token, when it is in control of the ring

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Question No: 8 ( M - 1 ) .
Ethernet uses a ------ bit static addressing scheme in which each device is assigned a unique address by the manufacturer.
► 64
► 48
► 32
► 8

Ethernet uses a 48-bit static addressing scheme

Question No: 9 ( M - 1 ) .
Formally named _____ informally known as the thick wire Ethernet or Thick net.
► 10 Base 2

**► 10 Base 5**
► 10 Base T
► None of the given

Thick Ethernet, officially known as 10 Base 5, is the oldest form of Ethernet. It was originally developed in the late 1970's by Digital Equipment Corporation, IBM, and **Xerox**, and became an international standard (IEEE 802.3) in 1983.
Taken from http://www.maznets.com/tech/10base-5.htm

Question No: 10 ( M - 1 ) .
Formally named _____ informally known as the twisted pair Ethernet or TP Ethernet.

► 10 Base 2
► 10 Base 5
► 10 Base T
► None of the given

twisted pair ethernet

Formally called 10 Base –T

- Also twisted pair Ethernet or simply TP Ethernet

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Question No: 11 ( M - 1 ) .
The maximum size of an Ethernet segment is_____

► 250 meters
**► 500 meters**
► 700 meters
► None of the given

One Ethernet cable is sometimes called a segment. This segment is limited to 500 meters in length. The minimum separation between connections is 3 meters. (P# 27)

Question No: 12 ( M - 1 ) .
A Bridge can _____
► Filter a frame
► Forward a frame
► Extend a LAN
**► Do all the above**

A bridge is a hardware device also used to connect two LAN segments to extend a LAN. It listens to all traffic and recognizes frame format. It also forwards only correct complete frames and discards the collided and error frames.

The most important task a bridge performs is frame filtering.

Question No: 13 ( M - 1 ) .
_____ computes shortest paths in a graph by using weights on edges as a measure of distance.
► Greedy algorithm
► Distance vector algorithm
► Dijksta's algorithm
► Non of the given

Dijkstras algorithm computes shortest paths in a graph by using weights on edg as a measure of distance. A path with the fewest number of edges may not be the path with least weight. (P# 173 e-books)

Question No: 14 ( M - 1 ) .
_____is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.
► Constant Bit Rate (CBR) service
**► Variable Bit Rate (VBR) service**
► Available Bit Rate (ABR) service
► None of the given

VARIABLE BIT RATE (VBR):

It is used for compressed audio and video where the data rate depends on the level of compression that can be achieved.

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Question No: 15 ( M - 1 ) .
Basic LAN technologies such as Ethernet, Token Ring, and FDDI use a _____.

**► Connectionless service paradigm**
► Connection-oriented service paradigm
► Both Connectionless and Connection-oriented service paradigm
► None of the given
Basic LAN technologies such ***as Ethernet, Token Ring, and FDDI use a*** connectionless service paradigm. Although a computer needs to wait for access to a shared medium before sending a packet
(zh,vuzs,nov10)

Question No: 16 ( M - 1 ) .
The product of delay and throughput measures the _____ of data that can be present on the network.
► Area
**► Volume**
► Length
► None of the given
DELAY THROUPUT PRODUCT:

It is computed as delay time multiplied by effective throughput. It measures

amount of data that can be present in the network (P# 80)

Question No: 17 ( M - 1 ) .
A network with throughput T and delay D has a total of _____ bit in transit at any time.
► T / D
**► T x D**
► T + D
► None of the given

A network with throughput T and delay D has a total of T x D bits in transit at any time. (e-books)

Question No: 18 ( M - 1 ) .
One repeater _____, two repeaters _____ the maximum cable length limitation.
**► doubles, triple**
► square roots, cude roots
► and, triple
► doubles, cancel
One repeater doubles, two repeaters triple the maximum cable length limitation. (P# 49)

Question No: 19 ( M - 1 ) .
A network uses a ------ if all computers attach to a central point
► Star Topology
► Ring Topology
► Bus Topology
► None of the given

STAR TOPOLOGY:

In this topology, all computers are attached to a central point, which is sometimes called the "Hub" (P# 25)

Question No: 20 ( M - 1 ) .
Computers attached to an ethernet use ------ in which a computer waits for the other to be idle before transmitting a frame.

► **CSMA/CD**
► CSMA/CA
► TOKEN PASSING
► None of the given

All computers attached to the Ethernet use CSMA/CD to co-ordinate their activities. A computer wishing to transmit checks for electrical activity on the cable, informally called a *carrier*. If there is no carrier, the computer can transmit. If a carrier is present, the computer waits for the sender to finish before proceeding.