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DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS

QUESTION BANK

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UNIT – I
OVER VIEW & PHYSICAL LAYER
ONE MARK

1. **The physical layer concerns with:**

A Bit-by-bit delivery
B Process to process delivery
C Application to application delivery
D None of the mentioned

Ans: A. Bit – by – bit delivery

2. **Which transmission media has the highest transmission speed in a network**

A Coaxial cable
B Twisted pair cable
C Optical fiber
D Electrical cable

Ans: C. Optical fiber

3. **Bits can be send over guided and unguided media as analog signal by**

A Digital modulation
B Amplitude modulation
C Frequency modulation
D Phase modulation

Ans: A. Digital modulation

4. **The portion of physical layer that interfaces with the media access control sub layer is called:**

A physical signaling sub layer
B Physical data sub layer
C Physical address sub layer
D None of the mentioned

Ans: A. Physical signaling sub layer

5. **Communication between a computer and keyboard involves _____ transmission.**

A. Automatic
B Half duplex
C Full – duplex
D Simplex

Ans: D. Simplex

6. **Which one of the following task done by Data Link Layer?**

A Framing
B Error control
C Flow Control
D Channel Coding

Ans: D. Channel Coding

7. **Which transmission media has the highest transmission speed in a network?**

A Coaxial Cable
B Twisted Pair Cable
C Optical Fiber
D Electrical Cable

Ans: C. Optical Fiber

8. **The Physical Layer is responsible for:**

A Line Coding
B Channel Coding
C Modulation
D All of the mentioned

Ans: D. All of the mentioned

9. **Wireless transmission can be done via**

A Radio waves
B Microwaves
C Infrared
D All of the Mentioned.

Ans: D. All of the Mentioned.

10. **A single channel is shared by multiple signal by:**

A Analog Modulation
B Digital Modulation
C Multiplexing
D None of the mentioned

Ans: C. Multiplexing

UNIT – II
DATA LINK LAYER
ONE MARK

1. **The data link layer takes the packets from _____ and encapsulates them into frames for transmission**

A Network Layer | B Physical Layer
C Transport Layer | D Application Layer

Ans: **A. Network Layer**

2. **Which sub layer of the data link layer performs data link functions that depend upon the type of medium?**

A Logical Link control Sub layer | B Media Access Control sub layer
C Network Interface control Sub layer | D None of the mentioned.

Ans: **B. Media Access Control sub layer**

3. **Automatic repeat request error management mechanism is provided by:**

A Logical Link control Sub layer | B Media Access Control sub layer
B Network Interface control Sub layer | D None of the mentioned.

Ans: **A. Logical Link control Sub layer**

4. **Which one of the following is a data link protocol?**

A Ethernet | B Point to Point Protocol
C HDLC | D All of the mentioned.

Ans: **D. All of the mentioned**

5. **Which one of the following is the multiple access protocol for channel access control?**

A CAMA/CD | B CSMA/CA
C. *Both (A) and (B)* | D None of the mentioned

Ans: **C. Both (A) and (B)**

6. **The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called**

A Piggybacking | B CRC
C Fletcher's Checksum | D None of the Mentioned

Ans: **A. Piggybacking**

7. **Header of a frame generally contains:**

A Synchronization bytes | B Addresses
C Frames identifier | D All of the mentioned

Ans: **E. All of the mentioned**

8. **Multiplexing is used in _____**

A Packet Switching | B Circuit Switching
C Data Switching | D None of the Mentioned

Ans: **D. Circuit Switching**

9. **Which multiplexing technique Transmits digital signals?**

A FDM | B TDM
C WDM | D None of the mentioned

Ans: **E. TDM**

10. **Multiplexing can provide**

A Efficiency | B Privacy
C Anti jamming | D Both (A) and (B)

Ans: **F. Both (A) and (B)**

UNIT – III
NETWORK LAYER SERVICES
ONE MARK

1. **The network layer concerns with**

A Bits

B Frames

C Packets

D None of the mentioned

Ans: **C. Packets**

2. **Which one of the following is not a function of network layer?**

A Routing

B Inter – networking

C Congestion control

D None of the mentioned

Ans: **D. None of the mentioned**

3. **In virtual circuit network each packet contains:**

A full source and destination address

B a short VC number

C both (a) and (b)

D none of the mentioned

Ans: **B. a short VC number**

4. **Which one of the following routing algorithm can be used for network layer design?**

A shortest path algorithm

B distance vector routing

C link state routing

D all of the mentioned

Ans: **D. all of the mentioned**

5. **ICMP is primarily used for:**

A error and diagnostic functions

B addressing

C forwarding

D none of the mentioned

Ans: **A. Error and Diagnostic functions**

6. **An IPv6 address is _____ bit long**

A 32

B 64

C 128

D None of the Above

Ans: **C. 128**

7. **In _____, each packet is treated independently of all others**

A Datagram switching

B Circuit Switching

C Frame switching

D None of these above

Ans: **A. Datagram switching**

8. **We can say that a Packet switching has _____ types of component.**

A 2

B 3

C 4

D 5

Ans: **C. 4**

9. **The IPv4 header size is**

A Is 20 to 60 byte long

B Is always 20 byte long

C Is always 60 byte long

D Depends on the MTU

Ans: **Is 20 to 60 byte long**

10. IP is a _____ datagram protocol

A An unreliable

B A connectionless

C Both A and B

D None of the above

Ans: **C. Both A and B**

UNIT – IV
TRANSPORT LAYER
ONE MARKS

1. Which of the following are transport layer protocols used in networking?

A	TCP and FTP	B	UDP and HTTP
C	TCP and UDP	D	HTTP and FTP

Ans: C. TCP and UDP

2. Transmission control protocol _____

A	is a connection-oriented protocol	B	uses a three way handshake to establish a connection
C	receives data from application as a single stream	D	all of the mentioned

Ans: D. all of the mentioned

3. Transport layer protocols deals with _____

A	application to application communication	B	process to process communication
C	node to node communication	D	man to man communication

Ans: B. Process to process communication

4. Which among the following are delivered by the transport layer in process-to-process delivery mechanism?

A	Frames	B	Datagrams
C	Packets	D	All of the above

Ans: C. Packet

5. Which one of the following uses UDP as the transport protocol?

A	HTTP	B	Telnet
C	DNS	D	SMTP

Ans: C. DNS

6. UDP is called _____ transport layer

A	Connectionless, reliable	B	Connection Oriented, unreliable
C	Connectionless, unreliable	D	None of the above

Ans: C. Connectionless, unreliable

7. TCP & UDP are both _____ layer protocol

A	Data Link	B	Network
C	Transport	D	None of the above

Ans: C. Transport

8. TCP groups a number of bytes together into packet called a

A	User datagram	B	Segment
C	Datagram	D	None of the above

Ans: B. Segement

9. Communications in TCP is _____

A	Simplex	B	Full Duplex
C	Half Duplex	D	None of the above

Ans: B. Full Duplex

10. The inclusion of the checksum in the TCP segment is _____

A	Optional	B	Mandatory
C	Both A and B	D	None of the above

Ans: B. Mandatory

UNIT – V
APPLICATION LAYER
ONE MARK

1. The _____ translates internet domain and host names to IP address.

A   domain name system
B   routing information protocol
C   network time protocol
D   internet relay chat

Ans: A. Domain Name System

2. Which one of the following protocol delivers/stores mail to receiver server?

A   simple mail transfer protocol
B   post office protocol
C   internet mail access protocol
D   hypertext transfer protocol

Ans: A. Simple Mail Transfer Protocol

3. Which is not a application layer protocol?

A   HTTP
B   SMTP
C   FTP
D   TCP

Ans: D. TCP

4. E-mail is _____

A   Loss-tolerant application
B   Bandwidth-sensitive application
C   Elastic application
D   None of the mentioned

Ans: C. Elastic application

5. Which is a time-sensitive service?

A   File transfer
B   File download
C   E-mail
D   Internet telephony

Ans: D. Internet Telephony

6. TELNET is abbreviation for

A   Terminal Network
B   Telephone Network
C   Telecommunication Network
D   None of the Above

Ans: A. Terminal Network

7. FTP uses the services of

A   UDP
B   TCP
C   IP
D   None of the above

Ans: B. TCP

8. _____ is the repository of information linked together from points all over the world.

A   The WWW
B   HTTP
C   HTML
D   None of these above

Ans: A. The WWW

9. The _____ is a standard for specifying any kind of information on the Internet

A   URL
B   ULR
C   RLU
D   None of these above

Ans: A. URL

10. A _____ document is created by a web server whenever a browser requests the document

A   Static
B   Dynamic
C   Active
D   None of these Above.

Ans: B. Dynamic

UNIT – I OVER VIEW & PHYSICAL LAYER
TWO MARKS

1. What is mean by data communication?

Ans: Data communication is the exchange of data (in the form of 1s and 0s) between two devices via some form of transmission medium (such as a wire cable).

2. What are the three criteria necessary for an effective and efficient network?

Ans: The most important criteria are performance, reliability and security. Performance of the network depends on number of users, type of transmission medium, the capabilities of the connected h/w and the efficiency of the s/w. Reliability is measured by frequency of failure, the time it takes a link to recover from the failure and the network's robustness in a catastrophe. Security issues include protecting data from unauthorized access and viruses.

3. What are the three fundamental characteristics determine the effectiveness of the data communication system?

Ans: The effectiveness of the data communication system depends on three fundamental characteristics:

(i) Delivery: The system must deliver data to the correct destination.
(ii) Accuracy: The system must deliver data accurately.
(iii) Timeliness: The system must deliver data in a timely manner

4. Mention the components of Data communication system

Ans: 1. Message, 2.Sender, 3.Medium, 4.Protocol, 5.Receiver.

5. Define Network?

Ans: A computer network is a set of devices connected by media links. The links connecting the devices are called as communication channels. Its size, its ownership, physical architecture and the distance it covers determine the type of network.

6. List the layers of the OSI model

Ans: 1.Physical layer   2.Data link layer   3.Network layer
4. Transport layer   5.Session layer   6.Presentation layer   7.Application layer.

7. Distinguish circuit switching and packet switching

Ans:

CIRCUIT SWITCHING	PACKET SWITCHING
In modern circuit-switched networks, electronic signals pass through several switches before a connection is established. During a call no other network traffic can use those switches.	In packet-based networks, the message gets broken into small data packets.
The resources remain dedicated to the circuit during the entire data transfer and the entire message follows the same path.	These packets are sent out from the computer and they travel around the network seeking out the most efficient route to travel as circuits become available.
Circuit switching can be analog or digital.	This does not necessarily mean that they seek out the shortest route. Each packet may go a different route from the others.

8. Define Framing.

Ans: A point-to-point connection between two computers or devices consists of a wire in which data is transmitted as a stream of bits. However, these bits must be framed into discernible blocks of information. Framing is a function of the data link layer. It provides a way for a sender to transmit a set of bits that are meaningful to the receiver. Ethernet, token ring, frame relay, and other data link layer technologies have their own frame structures. Frames have headers that contain information such as error-checking codes.

9. Give the classifications of computer networks.

Ans: 1.LAN , 2.WAN ,3.MAN.

10. What's meant by Topology of a network?

Ans: Topology refers to the way a network is laid out, either physically or logically. The topology of a network is the geometric representation of the relationships of all links and linking devices to each other. There are 4 basic topologies possible: (1) Mesh (2) Star 3) Bus (4) Ring.

11. What's a hub?

Ans: In star topology each device has a dedicated point-to-point link only to a central controller called as hub. The hub acts as an exchange (i.e.) if one device wants to send data to another, it sends data to another, it sends the data to the controller, which then relays the data to the other connected device.

12. What's meant by transmission mode?

Ans: It defines the direction of signal flow between two linked devices. There are 3 types of transmission modes:

    1. Simplex: Unidirectional communication.

    2. Half-duplex: Bi directional, but not simultaneous utilization of link.

    3. Full-duplex: Bi directional, simultaneous utilization of link.

13. What's a LAN?

Ans: LAN is a data communication network within a building, plant (or) campus (or) between nearby buildings.

14. What's MAN?

Ans: A data communication network system covering an area the size of a town or city.

15. What's WAN?

Ans: A data communication network spanning states, countries or the whole world.

16. What's protocol?

Ans: A set of rules that govern all aspects of information for communication.

17. Which OSI layers are the network support layers?

Ans: 1. Physical layer 2. Data link layer 3. Network layer.

18. What is the difference between network delivery and Transport layer delivery?

Ans:
- **Network layer delivery:** The network layer is responsible for the source-to-destination delivery of a packet. It treats each packet independently, even though they belong to the same message.

- **Transport layer delivery:** The transport layer is responsible for source-to- destination (end-to-end) delivery of the entire message.

19. What are the responsibilities of the session layer?

Ans:
1. **Dialog control**: The session layer allows two systems enter into a dialog.

2. **Synchronization:** The session layer allows a process to add checkpoints into a stream of data to achieve synchronization between sender and receiver.

20. **What are the responsibilities of the presentation layer?**

Ans:
1. **Translation:** The presentation layer is responsible for interoperability between the different encoding methods used in different computers. The presentation layer at the sender changes the information from its sender-dependent format into a common format. The presentation layer at the receiving machine changes the common format into its receiver-dependent format.

2. **Encryption/Decryption:** To carry sensitive information, a system must be able to assure privacy. Encryption means that the sender transforms the original information to another form and sends the resulting message out over the network. Decryption reverses the original process to transform the message back to its original form.

3. **Compression:** Data compression reduces the number of bits to be transmitted.

21. **What are the disadvantages of optical fiber as a transmission medium?**

Ans:
The disadvantages of optical fiber are
• Very expensive. • Installation and maintenance is difficult. • Fragility

22. **What are the criteria used to evaluate transmission medium?**

Ans:
The criteria used to evaluate transmission medium are
• Throughput • Propagation speed • Propagation time • Wavelength

UNIT – II DATA LINK LAYER
TWO MARKS

1. What are the three main functions of the data link layer?

Ans:
1. **Line discipline**: It coordinates the link system; it determines which device can send and when it can send.
2. **Flow control**: It coordinates the amount of data that can be sent before receiving acknowledgement.
3. **Error control**: It allows the receiver to inform the sender of any lost or damaged frames and coordinates the transmission of those frames by the sender.

2. What are Virtual LANs?

Ans: Short for virtual LAN, a network of computers that behave as if they are connected to the same wire even though they may actually be physically located on different segments of a LAN. VLANs are configured through software rather than hardware, which makes them extremely flexible.

3. Why are protocols needed?

Ans: Protocols are needed for predetermined understandings for communications. Network protocols are sets of rules for exchanging information. This exchange usually occurs much like a dialog between two computers. The exchange often begins with the client sending a signal to the server, providing key information about what kind of data is being requested.

4. What are the responsibilities of data link layer?

Ans: Specific responsibilities of data link layer include the following.
a) Framing b) Physical addressing c) Flow control d) Error control e) Access control

5. Mention the types of errors

Ans: There are 2 types of errors   a) Single-bit error.   b) Burst-bit error.

6. Define the following terms.

Ans: Single bit error: The term single bit error means that only one bit of a given data unit
Burst error: Means that 2 or more bits in the data unit have changed from 1 to 0 or from 0 to 1

7. What is redundancy?

Ans: It is the error detecting mechanism, which means a shorter group of bits or extra bits may be appended at the destination of each unit.

8. List out the available detection methods.

Ans: There are 4 types of redundancy checks are used in data communication.
a) Vertical redundancy checks (VRC). b) Longitudinal redundancy checks (LRC).
c) Cyclic redundancy checks (CRC).   d) Checksum.

9. Write short notes on VRC.

Ans: The most common and least expensive mechanism for error detection is the vertical redundancy check (VRC) often called a parity check. In this technique a redundant bit called a parity bit, is appended to every data unit so, that the total number of 0's in the unit (including the parity bit) becomes even.

10. Write short notes on LRC.

Ans: In longitudinal redundancy check (LRC), a block of bits is divided into rows and a redundant row of bits is added to the whole block.

11. Write short notes on CRC.

Ans: The third and most powerful of the redundancy checking techniques is the cyclic redundancy checks (CRC) CRC is based on binary division. Here a sequence of redundant bits, called the CRC remainder is appended to the end of data unit.

12. **Write short notes on CRC generator**

Ans: A CRC generator uses a modulo-2 division.
a) In the first step, the 4 bit divisor is subtracted from the first 4 bit of the dividend.
b) Each bit of the divisor is subtracted from the corresponding bit of the dividend without disturbing the next higher bit.

13. **Write short notes on CRC checker.**

Ans: A CRC checker functions exactly like a generator. After receiving the data appended with the CRC it does the same modulo-2 division. If the remainder is all 0's the CRC is dropped and the data accepted. Otherwise, the received stream of bits is discarded and the dates are resent.

14. **What are the steps followed in checksum generator?**

The sender follows these steps
a) The units are divided into k sections each of n bits.

Ans: b) All sections are added together using 2's complement to get the sum.
c) The sum is complemented and become the checksum. d) The checksum is sent with the data.

15. **List out the steps followed is checksum checker side**

The receiver must follow these steps

Ans: a) The unit is divided into k section each of n bits. b) All sections are added together using 1's complement to get the sum. c) The sum is complemented. d) If the result is zero.

16. **Write short notes on error correction**

It is the mechanism to correct the errors and it can be handled in 2 ways.

Ans: a) When an error is discovered, the receiver can have the sender retransmit the entire data unit.
b) A receiver can use an error correcting coder, which automatically corrects certain errors

17. **What is the purpose of hamming code?**

Ans: A hamming code can be designed to correct burst errors of certain lengths. So the simple strategy used by the hamming code to correct single bit errors must be redesigned to be applicable for multiple bit correction.

18. **Define flow control.**

Ans: Flow control refers to a set of procedures used to restrict the amount of data. The sender can send before waiting for acknowledgment.

19. **What is a buffer?**

Ans: Each receiving device has a block of memory called a buffer, reserved for storing incoming data until they are processed.

20. **Mention the categories of flow control.**

Ans: There are 2 methods have been developed to control flow of data across communication links.
a) Stop and wait- send one from at a time. b) Sliding window- send several frames at a time.

21. **Define ARQ**

Ans: Error control in the data link layer is based on Automatic repeat request (ARQ), which means retransmission of data in 3 cases. a) Damaged frame b) Lost frame   c) Lost acknowledgment.

22. **Mention the function of go-back N-ARQ.**

Ans: It is the popular mechanism for continuous transmission error control. In this method, if our frame is lost or damaged, all frames sent since the last frame acknowledged are retransmitted.

23. **What is selective reject ARQ?**

Ans: In selective reject ARQ only the specific damaged or lost frame is retransmitted. If a frame is corrupted in transit, a NAK is returned and the frame is resent out of sequence.

24. **What is piggy backing?**

Ans: Piggy backing means combining data to sent and acknowledgement of the frame received in one single frame. Piggy backing can save bandwidth because the overhead from a data frame and an ACK frame can be combined into just one frame.

25. **What is the mechanism of stop and wait flow control?**

Ans: In stop and wait method of flow control, the sender waits for an acknowledgement after every frame it sends. Only when an acknowledgement has been received the next frame is sent.

26. **What is the mechanism of sliding window flow control?**

Ans: In the sliding window method of flow control the sender can transmit several frames before needing an acknowledgement. The receiver uses a single acknowledgement to confirm the receipt of multiple data frames.

27. **In what way sliding window flow control is more efficient than stop and wait flow control?**

Ans: The disadvantage of stop and wait flow control is inefficiency and slow. In situations where the bit length of the link is greater than the frame length, the facility of the link is not utilized efficiently in stop and wait flow control. Efficiency can be greatly improved by allowing multiple frames to be in transit at the same time. This method is implemented in sliding window flow control. To keep track of which frames have been acknowledged, each is labeled with a sequence number.

28. **Define data transparency.**

Ans: Data transparency in data communication is the ability to send any combination of bits as data.

29. **What is CSMA/CD?**

Ans: CSMA/CD is the access method used in an Ethernet. It stands for Carrier Sense Multiple Access with Collision detection. Collision: Whenever multiple users have unregulated access to a single line, there is a danger of signals overlapping and destroying each other. Such overlaps, which turn the signals into unusable noise, are called collisions. In CSMA/CD the station wishing to transmit first listens to make certain the link is free, then transmits its data, then listens again. During the data transmission, the station checks the line for the extremely high voltages that indicate a collision. If a collision is detected, the station quits the current transmission and waits a predetermined amount of time for the line to clear, then sends its data again.

30. **Define Collision.**

Ans: The situation that occurs when two or more devices attempt to send a signal along the same channel at the same time. The result of a collision is generally a garbled message. All computer networks require some sort of mechanism to either prevent collisions altogether or to recover from collisions when they do occur

UNIT – III NETWORK LAYER SERVICES
TWO MARKS

1. Define IP address.

Ans: IP address is the 3-bit number for representing a host or system in the network. One portion of the IP address indicates a networking and the other represents the host in a network.

2. What are the four internetworking devices?

Ans: The four internetworking devices are, • Repeaters • Bridges • Routers • Gateway

3. What are the User Support Layer and Network Support Layer?

Ans: **The user support layers are:** Session layer, Presentation layer, Application layer. These allow interoperability among unrelated software system.

Network support Layers are : Physical Layer, Data link layer and Network layer. These deals with electrical specification, physical connection, transport timing and reliability.

4. What is the gateway or Router?

Ans: A node that is connected to two or more networks is commonly known as a gateway. It is also known as a router. It is used to forward messages from one network to another. **Both the gateway and router regulate the traffic in the network**.

Differences between gateway and router: A router sends the data between two similar networks while gateway sends the data between two dissimilar networks.

5. What is Routing? Name two methods of Routing?

Ans: A Router is a process of selecting path along which the data can be transferred from source to the destination. Routing is performed by a special device known as a router.

Static routing.   Dynamic Routing .

6. What is meant by Brouter?

Ans: A brouter is a single protocol or multiprotocol router that sometimes acts as a router and sometimes acts as a bridge.

7. What are the advantages of Packet Switching?

Ans:
- Delay in delivery of packets is less, since packets are sent as soon as they are available.
- Switching devices don't require massive storage, since they don't have to store the entire messages before forwarding them to the next node. Data delivery can continue even if some parts of the network faces link failure. Packets can be routed via other paths.
- It allows simultaneous usage of the same channel by multiple users. It ensures better bandwidth usage as a number of packets from multiple sources can be transferred via the same link.

8. What is Datagram?

Ans: In datagram approach, each packet is treated independently from all others. Even when one packet represents just a place of a multi packet transmission, the network treats it although it existed alone. Packets in thus technology are referred to a datagram.

9. What is Unicast?

Ans: An identifier for a set of interfaces. A packet sent to a unicast address is delivered to the interface identified by that address.

10. What is Anycast?

Ans: An identifier for a set of interfaces. A packet sent to an anycast address is delivered to the one of the interface identified by the address.

11. What is Multicast?

Ans: An identifier for a set of interfaces. A packet sent to a multicast address is delivered to all interfaces identified by that address.

12. What are the responsibilities of network layer?

Ans: The network layer is responsible for the source to destination delivery of packet across multiple network links. The specific responsibilities of network layer include the following:

Logical Addressing, Routing

13.   What is Virtual Circuit?

Ans: A logical circuit made between the sending and receiving computers. The connection is made after both computers do handshaking. After the connection, all packets follow the same route and arrive in sequence.

14.   Define IP Address.

Ans: IP address is the 3 – bit number for representing a host or system in the network. One portion of the IP address indicates a networking and the other represent the host in a network.

UNIT – IV TRANSPORT LAYER
TWO MARKS

1. What is function of transport layer?

Ans: The protocol in the transport layer takes care in the delivery of data from one application program on one device to an application program on another device. They act as a link between the upper layer protocols and the services provided by the lower layer.

2. What are the duties of the transport layer?

The services provided by the transport layer

Ans: End-to- end delivery
Addressing Reliable delivery Flow control Multiplexing.

3. What is the difference between network layer delivery and the transport layer delivery?

Network layer delivery: The network layer is responsible for the source-to-destination delivery of packet across multiple network links.

Ans: **Transport layer delivery:** The transport layer is responsible form source-to-destination delivery of the entire message.

4. What are the four aspects related to the reliable delivery of data?

Ans: The four aspects are, Error control Sequence control Loss control Duplication control.

5. What is meant by segment?

Ans: At the sending and receiving end of the transmission, TCP divides long transmissions into smaller data units and packages each into a frame called a segment.

6. What is meant by quality of service?

The quality of service defines a set of attributes related to the performance of the connection.

Ans: For each connection, the user can request a particular attribute each service class is associated with a set of attributes.

7. What is frame?

Ans: A frame consists of one complete cycle of time slots, including one or more slot dedicated to each sending device.

8. What are the advantages of using UDP over TCP?

UDP does not include the overhead needed to detect reliability.

It does not need to maintain the unexpected deception of data flow.

Ans: UDP requires less processing at the transmitting and receiving of hosts.

It is simple to use for a network.

The OS does not need to maintain UDP connection information.

9. What is TCP?

Ans: TCP provides a connection oriented, reliable byte stream service. The connection oriented means the two applications using TCP must establish a TCP connection with each other before they can exchange data.

10. List the flag used in TCP header.

Ans: TCP header contains six flags. They are URG, ACK, PSH, RST, SYN, FIN

11. Give the approaches to improve the QoS.

Ans: Fine grained approaches, which provide QoS to individual applications or flows. Integrated services, QoS architecture developed in the IETE and often associated with RSVP.

12. What is a port?

Ans: Applications running on different hosts communicate with TCP with the help of a concept called as ports. A port is a 16 bit unique number allocated to a particular application.

13. List the services of end to end services

Ans: Guarantee message delivery. Delivery messages in the same order they are sent. Deliver at most one copy of each message. Support arbitrarily large message. Support synchronization.

14. **What is congestion?**

Ans: When load on network is greater than its capacity, there is congestion of data Packets. Congestion occurs because routers and switches have queues or buffers.

15. **What are the types of QoS tools?**

Ans: Classification Congestion management, Congestion avoidance, Shaping/policing Link efficiency

16. **List some ways to deal with congestion.**

Ans: packet elimination
 * Flow control
 * Buffer allocation

17. **List the three types of addresses in TCP/IP.**

Ans: Three types of addresses are used by systems using the TCP/IP protocol: the physical address, the internetwork address (IP address), and the port address.

18. **What is the flow characteristics related to QoS?**

Ans: The flow characteristics related to QoS are
 * Reliability * Delay * Jitter * Bandwidth

19. **Define Throughput.**

Ans: It is defines as a number of packets passing through the network in a unit of time.

20. **What are the two types of protocols used in Transport layer?**

Ans: The two types of protocols used in Transport layer are
 * TCP * UDP

21. **Define Socket address.**

Ans: The combination of IP address and port address is called Socket address.

22. **Define UDP**

Ans: User datagram protocol is a Unreliable, connectionless protocol, used along with the IP protocol.

23. **Why TCP services are called Stream delivery services?**

Ans: TCP allows the sending process to deliver data as a stream of bytes and the receiving process to deliver data as a stream of bytes. So it is called as stream of bytes.

24. **Define jitter**

Ans: Jitter is defined as a variation in the delay of received packets. The sending side transmits packets in a continuous stream and spaces them evenly apart. Because of network congestion, improper queuing, or configuration errors, the delay between packets can vary instead of remaining constant.

25. **Compare connectionless service & connection oriented service**

Ans: In connection less service there is no connection between transmitter & receiver Ex: UDP
In connection oriented service there is a connection between transmitter & receiver Ex: TCP

UNIT – V APPLICATION LAYER
TWO MARKS

1 What is the purpose of Domain Name System?

Ans: Domain Name System can map a name to an address and conversely an address to name.

2. Discuss the three main division of the domain name space.

Domain name space is divided into three different sections: generic domains, country domains & inverse domain.

Ans: **Generic domain:** Define registered hosts according to their generic behavior, uses generic suffixes.

Country domain: Uses two characters to identify a country as the last suffix.

Inverse domain: Finds the domain name given the IP address.

3. Discuss the basic model of FTP.

Ans: The client has three components: the user interface, the client control process, and the client data transfer process. The server has two components: the server control process and the server data transfer process. The control connection is made between the control processes. The data connection is made between the data transfer processes.

4. What is the function of SMTP?

Ans: The TCP/IP protocol supports electronic mail on the Internet is called Simple Mail Transfer (SMTP). It is a system for sending messages to other computer users based on e- mail addresses. SMTP provides mail exchange between users on the same or different computers.

5 Write down the three types of WWW documents.

The documents in the WWW can be grouped into three broad categories: static, dynamic and active.

Ans: **Static:** Fixed-content documents that are created and stored in a server.

Dynamic: Created by web server whenever a browser requests the document.

Active: A program to be run at the client side.

6. What is the purpose of HTML?

Ans: HTML is a computer language for specifying the contents and format of a web document. It allows additional text to include codes that define fonts, layouts, embedded graphics and hypertext links.

7. How is a secret key different from public key?

Ans: In secret key, the same key is used by both parties. The sender uses this key and an encryption algorithm to encrypt data; the receiver uses the same key and the corresponding decryption algorithm to decrypt the data. In public key, there are two keys: a private key and a public key. The private key is kept by the receiver. The public key is announced to the public.

8. What is a digital signature?

Ans: Digital signature is a method to authenticate the sender of a message. It is similar to that of signing transactions documents when you do business with a bank. In network transactions, you can create an equivalent of an electronic or digital signature by the way you send data.

9. What are the advantages & disadvantages of public key encryption?

Advantages:

a). Remove the restriction of a shared secret key between two entities. Here each entity can create a pair of keys, keep the private one, and publicly distribute the other one.

Ans: b) The no. of keys needed is reduced tremendously. For one million users to communicate, only two million keys are needed.

Disadvantage:

If you use large numbers the method to be effective. Calculating the cipher text using the long keys takes a lot of time. So it is not recommended for large amounts of text.

10   **Define the two types of user agents in the electronic mail system**

Ans: Command driven: It normally accepts a one character command from the keyboard to perform its task.

GUI based: They contain GUI components that allow the user to interact with the software by using both the keyword and mouse.

11.   **What is SMTP?**

Ans: Simple Mail Transfer Protocol is a standard and reliable host to host mail transport protocol that operates over the TCP port 25.

12.   **What are the four main properties of HTTP?**

Ans: Global Uniform Resource Identifier

Request response exchange.

Statelessness.

Resource meta data

13.   **What is SMTP used for?**

Ans: SMTP is used when email is delivered from an email client, such as Outlook Express, to an email server or when email is delivered from one email server to another.

14.   **What are the basic functions of email?**

Ans: Composition, Transfer, Reporting, Displaying and Disposition of mails.

15.   **Define WWW?**

Ans: It is an internet application that allows users to view web pages and move from one web page to another.

16.   **What is the web browser?**

Ans: Web browser is a software program that interprets and displays the contents of HTML web pages

17.   **What is URL?**

Ans: URL is a string identifier that identifies a page on the World Wide Web.

18.   **What are the responsibilities of Application Layer?**

The Application Layer enables the user, whether human or software, to access the network. It provides user interfaces and support for services such as e-mail, shared database management and other types of distributed information services

Ans:
- Network virtual Terminal.
- File transfer, access and Management (FTAM).
- Mail services.
- Directory Services.

19.   **What is simple mail transfer protocol?**

Ans: The TCP/IP protocol that supports electronic mail on the internet is called Simple Mail Transfer Protocol (SMTP). It is a system for sending messages to other computer users based on email addresses.

20.   **What do you mean by File transfer protocol?**

Ans: It is a standard mechanism provided by the internet for copying a file from one host to another

21.   **What are the two types of connections in FTP?**

Ans: The two types of connections in FTP are Control connection, Open connection

22.   **Define HTTP.**

Ans: It is used mainly to access data on the World Wide Web. The protocol transfers data in the form of plaintext, hypertext, audio, video and soon

23.   **What are the types of messages in HTTP transaction?**

Ans: The types of messages in HTTP transaction are Request messages, Response messages

FIVE MARKS
UNIT – I OVER VIEW & PHYSICAL LAYER
1. What are Header and Trailer and how they get added and removed?
2. Give a brief note on Switching.
3. What are the various topologies? Explain.
4. List the uses and advantages of Networks.
5. Explain Circuit Switching in detail.
6. Give a brief note on Frequency division Multiplexing & Wavelength Division Multiplexing
7. Give a brief note on Time Division Multiplexing.
8. Explain in details about user of Computer Networks.
9. Explain the TCP/IP reference model with a neat sketch

UNIT – II DATA LINK LAYER
1. Explain Sliding Window Protocols.
2. Discuss about Cellular Telephone.
3. Show the types of Errors in Data Link layer with Neat diagram.
4. Explain VRC, LRC, CRC.
5. Discuss about Piconet and Scatternet with neat Diagram.
6. Give a Notes on ALOHA and CSMA.
7. Explain in detail about CSMA/CD and CSMA/CA.
8. Draw and explain the frame format of Standard Ethernet.
9. Discuss in detail Go back N and selective Repeat protocol
10. Elaborate note on Bluetooth.

UNIT – III NETWORK LAYER SERVICES
1. List down the functionalities of Network Layer.
2. Write short notes on Network Address.
3. Explain distance Vector routing algorithms wit suitable illustration.
4. Briefly explain about Packet Switching.
5. Explain the Network Quality of Service in details.

UNIT – IV TRANSPORT LAYER
1. Discuss with a neat diagram of UDP Segment
2. Explain about TCP Congestion control in detail.
3. Explain How TCP Flow control works.
4. Explain in detail the various techniques to improve QoS
5. Explain in detail window management in TCP.
6. List down the features of UDP.
7. Show the functions of Transport Layer.
8. Differentiate UDP and TCP.

UNIT – V APPLICATION LAYER
1. Explain in detail a protocol for Electronic Mail.
2. Explain DNS with reference to its components and working.
3. Write a note on Simple Mail Transfer Protocol (SMTP).
4. What are the two remote application processes can communicate mainly in two different fashion? Explain in briefly.
5. Explain in detail as following: i) DNS   ii) HTTP.

TEN MARKS
UNIT – I OVER VIEW & PHYSICAL LAYER

1. Discuss about ISO –OSI Reference Model in detail.
2. Explain briefly the different types of Guided transmission media used for data Communication
3. Explain briefly the different types of unguided transmission media used for data communication.
4. Briefly explain the different types of packet switching techniques with suitable networks. Write each of its advantages and disadvantages.
5. Write short notes on
   (i) TCP/IP protocol (ii) Network model   (iii) Datagram network (iv) Virtual circuit network.

UNIT – II DATA LINK LAYER

1. Explain in details about the available Error detection methods.
2. With suitable example, explain the working principle of Cyclic Redundancy Check.
3. Explain in details about IEEE 802.11
4. Discuss about the Satellite Networks
5. With the help of a neat diagram explain in detail Noisy and Noiseless Channel with neat diagram.

UNIT – III NETWORK LAYER SERVICES

1. Give a detailed account on IPv4 and IPv6
2. Illustrate on Routing Algorithms.
3. Difference between Adaptive and Non Adaptive Routing Algorithm.
4. Give Short Notes on Connection Oriented and Connectionless Oriented Packet Switching.

UNIT – IV TRANSPORT LAYER

1. Describe Error Control and Flow Control.
2. Detailed Notes on TCP.
3. Detailed Notes on UDP.
4. Give a Short notes on following: TCP Features, TCP Services.
5. Give a Short notes on following : Windows in TCP, TCP Congestion Control.

UNIT – V APPLICATION LAYER

1. Explain in detail about Remote Procedure Call.
2. Illustrate the operation of FTP with a neat sketch.
3. Describe how SMTP protocols are used in E – Mail applications.
4. Explain in detail about WWW.
5. Explain in detail about FTP with neat diagram.