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TE222

Page No:
Date:

Oral Question Bank & Answers

Q1) What is IP address?
→ It is a unique numerical label assigned to each device connected to a network that uses the Internet protocol for communication.

Q2) What is logical address and physical address?
→ 1) logical Add^r :: IP address used at the Network layer (identifies device location in Network)
2) Physical Address :: MAC address used at the Data link layer

Q3) How to connect two machines in the same network without topology or using direct connections?
→ Using a cross-over cable directly between the two computer's Ethernet ports.

Q4) How to connect two machines in the same network without topology using direct connections?
→ Using a cross-over cable directly between the two computers Ethernet ports.

Q5) What types of cables are used for connecting two or more machines in a network? Write specifications
→ 1) Cable type: UTP (unshielded Twisted pair) cat5/cat6
2) specification: 4 twisted pairs, RJ45 connector 100 Mbps to 1 Gbps speed.

Q6) Name two types of UTP cables

→ 1) Straight cable: used to connect different devices (PC ↔ Switch)

2) Cross cable: used to connect similar devices (PC ↔ PC)

Q7) Write Port Numbers used for TELNET, FTP, HTTP, HTTPS, SMTP.

→

Service	Port No
TELNET	23
FTP	21
HTTP	80
HTTPS	443
SMTP	25

Q8) For accessing facebook, which port number is used which application layer protocol is used?

→ • Port :- 443
• Protocol :- HTTPS

Q9) For Browsing which port Number is used?

→ Port 80 (HTTP) or 443 (HTTPS)

Q10) Different classes of IP addresses

→

Class	Range	used for
A	1.0.0.0 – 126.255.255.255	large Networks
B	127.0.0.0 – 191.255.255.255	medium Networks
C	192.0.0.0 – 223.255.255.255	Small Networks

D	224.0.0.0 – 239.255.255.255	Multicasting
E	240.0.0.0 – 255.255.255.255	Experimental.

Q11) For facebook, which application layer protocol is used and why?

→ HTTPS:- because it is secure version of HTTP that encrypts data for safe communication.

Q12) What is the port number for HTTP?

→ Port 80

Q13) In Networking, which communication is used parallel or serial?

→ Serial communication is used for networking because data is transmitted bit-by-bit over long distance

Q14) Where is parallel communication used?

→ used inside computers, such as between CPU and motherboard or printer connections.

Q15) What is FTP and TFTP?

→ 1) FTP (File Transfer protocol) :- used to transfer files between client and server using TCP (Port 21)

2) TFTP (Trivial file Transfer protocol): simplified FTP using UDP (Port 69), no authentication.

Page No:
Date:

Q16) Which connection is used in mother board?
→ Parallel Bus or serial Bus (like PCI, USB SATA) connections are used

Q17) Classes of IP address, range & Identification
→ Refer Q10

Q18) Draw & write function of OSI layers.
→

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

7) Application layer:
Function:- Provides interface between user and network

6) Presentation layer:
Function:- Translates data format between application and network.
- Performs encryption/decryption.

5) Session layer:
Function:- manages sessions between applications

4) Transport layer
Function:- Provides reliable data transfer.
- Perform segmentation, error detection

3) Network layer
Function:- provides node-to-node delivery and error detection

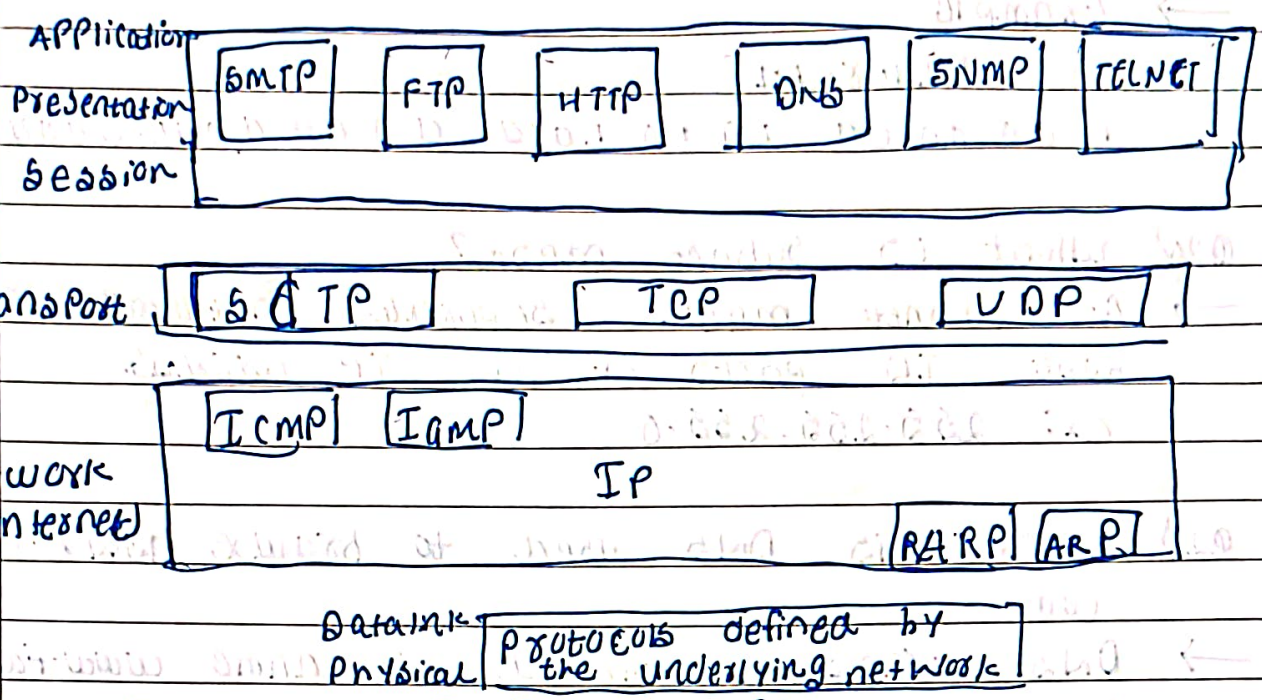
2) Data link layer:
Function:- Handle logical addressing and routing of packet

1) Physical layer
Function:- Deals with transmission of raw bits over physical medium

Page No:
Date.

Q19) Draw TCP/IP model

→



Q20) Write URL of facebook, Google.

→ • Facebook :- https://www.facebook.com
• Google :- https://www.google.com

Q21) What is workable & actual range of IP Class A

→ • Class A Network ID: 1.0.0.0 to 126.0.0.0
• Workable (Host usable): 1.0.0.1 - 126.255.255.254

Q22) Function of Network layer.

→ Performs routing, logical addressing & Path determination

Q23) How many bits are used for physical address?

→ 48 bits (MAC address)

Q24) How many bit are used for logical address.

→ 32 bits (IPV4) or 128 bits (IPV6)

Page No:
Date:

Q25) Draw binary format of IP.

→ Example

192.168.1.1

11 00 00 00. 10 10 1000, 0 0 00 0 001. 0000 0001

Q26) What is subnet mask?

→ A subnet mask seperates network ID host ID parts of an IP address.
ex: 255.255.255.0

Q27) Where is DNS used to browse www.facebook.com.

→ DNS translates the domain name www.facebook.com into its IP address.

Q28) Different devices used for different layer of OSI

→

	layer	device
1)	Physical	Hub
2)	Data link	Switch
3)	Network	Router
4)	Transport	Gateway
5)	Application	Firewall

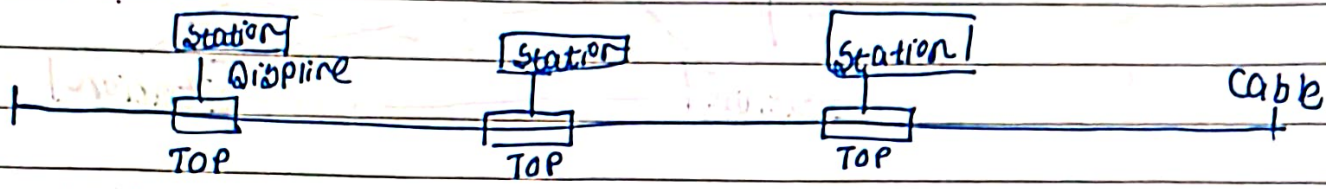
Q29) How to get first and last address of the Network

→ First address: Network address + 1
last address: Broadcast address - 1
Eg: IP address: 192.168.1.20/24
Network addr: 192.168.1.0
First addr = 192.168.1.1

last addr = 192.168.1.254

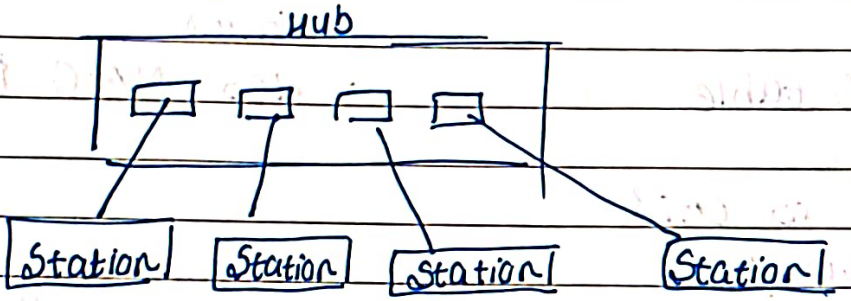
Q 30) Draw different topologies & its Applications.

→ 1. Bus Topology

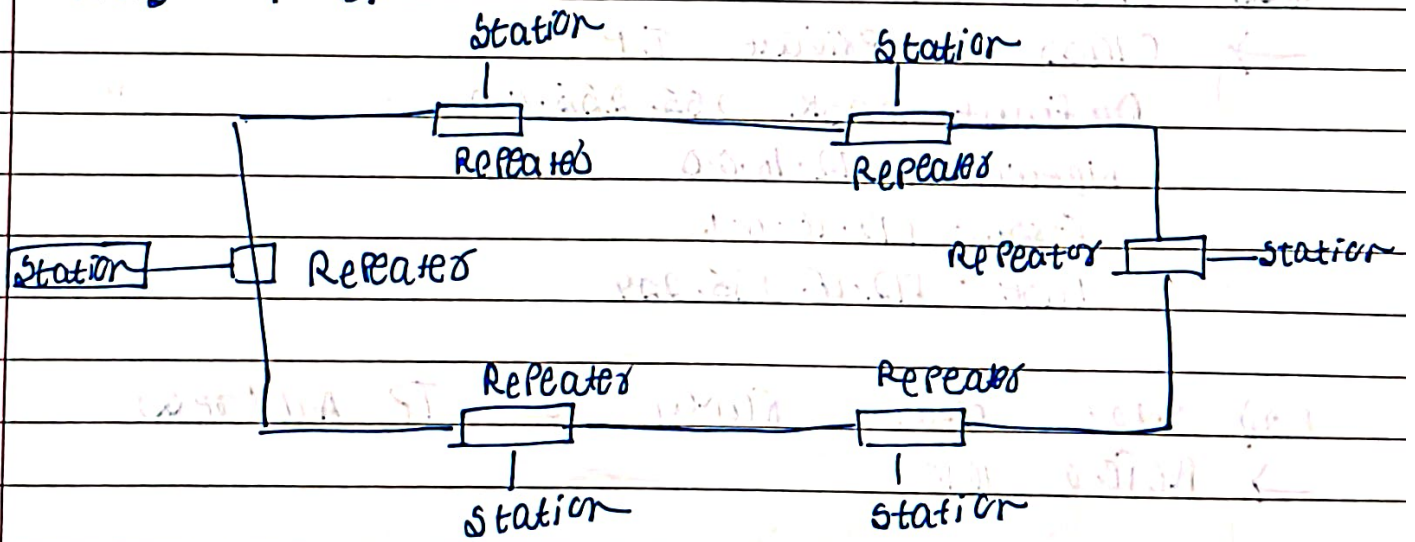


Application:- Small office or home networks

2) Star Topology

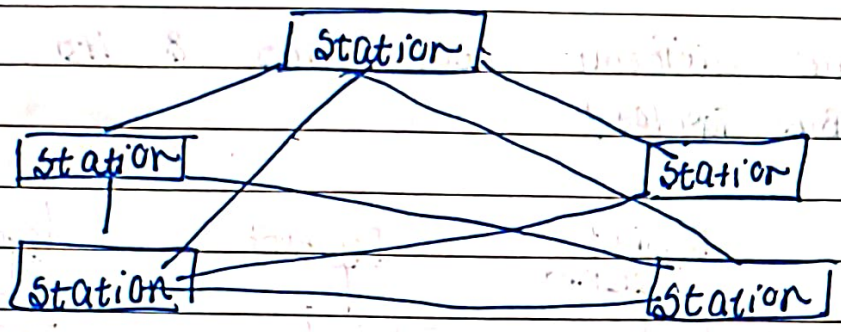


3) Ring Topology



Application: Used in token ring network

4) Mesh Topology



Q31) Difference between HUB and switch

→

HUB	Switch
• works on physical layer	• work's on datalink layer
• Broadcast data to all	• sends to specific device
• Slower	• faster
• No MAC table	• Has MAC table

Q32) What is CAT?

→ CAT - Category

eg: CAT5, CAT6 - twisted pair cables for LAN

Q33) 172.16.18.10 - Find First & last Address

→ Class B Private IP

Default mask 255.255.0.0

Network :- 172.16.0.0

First :- 172.16.0.1

last : 172.16.255.254

Q34) Writ down range of IP Address

→ Refer Q10

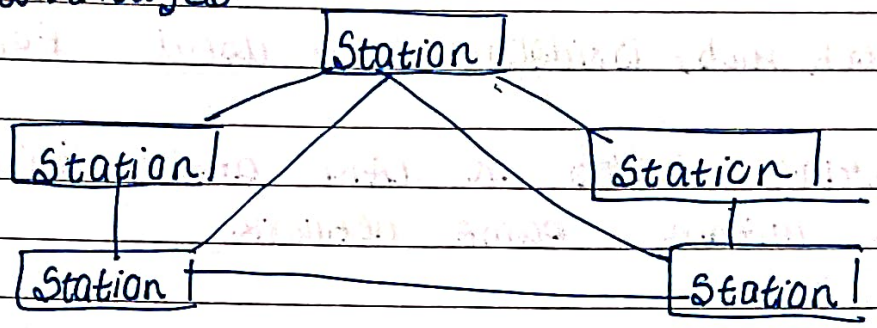
Page No:
Date:

Q35) Different types of cable

→ 1) Twisted pair (UTP, STP)
2) Coaxial cable
3) Fibre optic cable

Q36) Draw mesh topology. Write advantages and disadvantages

→



Advantages:- Reliable, fault tolerant
Disadvantages:- costly, complex wiring

Q37) Which protocol (Application layer) is used for downloading purpose?

→ FTP (File Transfer protocol)

Q38) For what purpose we are using FTP in internet

→ used to upload/download files between client and server on internet

Q39) Difference between HTTP & HTTPS

→

HTTP	HTTPS
1) Not secure	2) Secure (uses SSL/TLS)
2) Port 80	2) Port 443
3) Data in Pain text	3) Data encrypted

Q40) Draw frame format of UDP

→

Source Port (2 bytes)	Destination Port (2 bytes)
length (2 bytes)	Checksum (2 bytes)

Q41) Switch, Hub, Bridges are used for which layer

→ Connecting devices in LAN and forwarding data within same network

Q42) NIC card is present in which layer?

→ Data link layer

Q43) What is displayed using ping command?

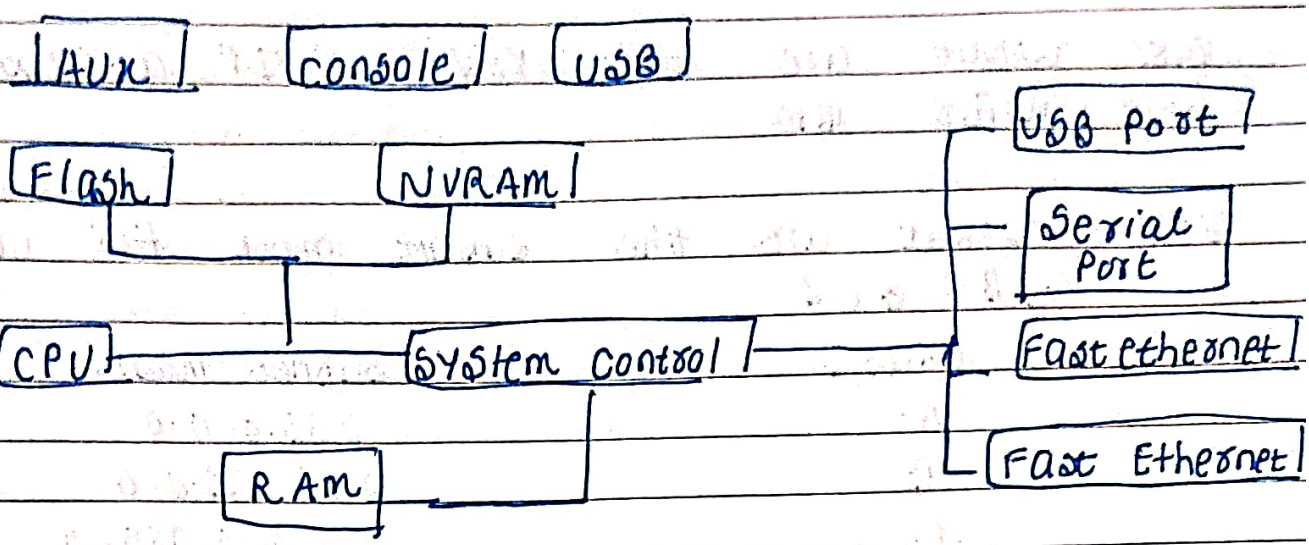
→ Checks connectivity; shows response time and packet loss.

Q44) Write tracet command.

→ tracet <destination> → shows route taken by packets to reach destination

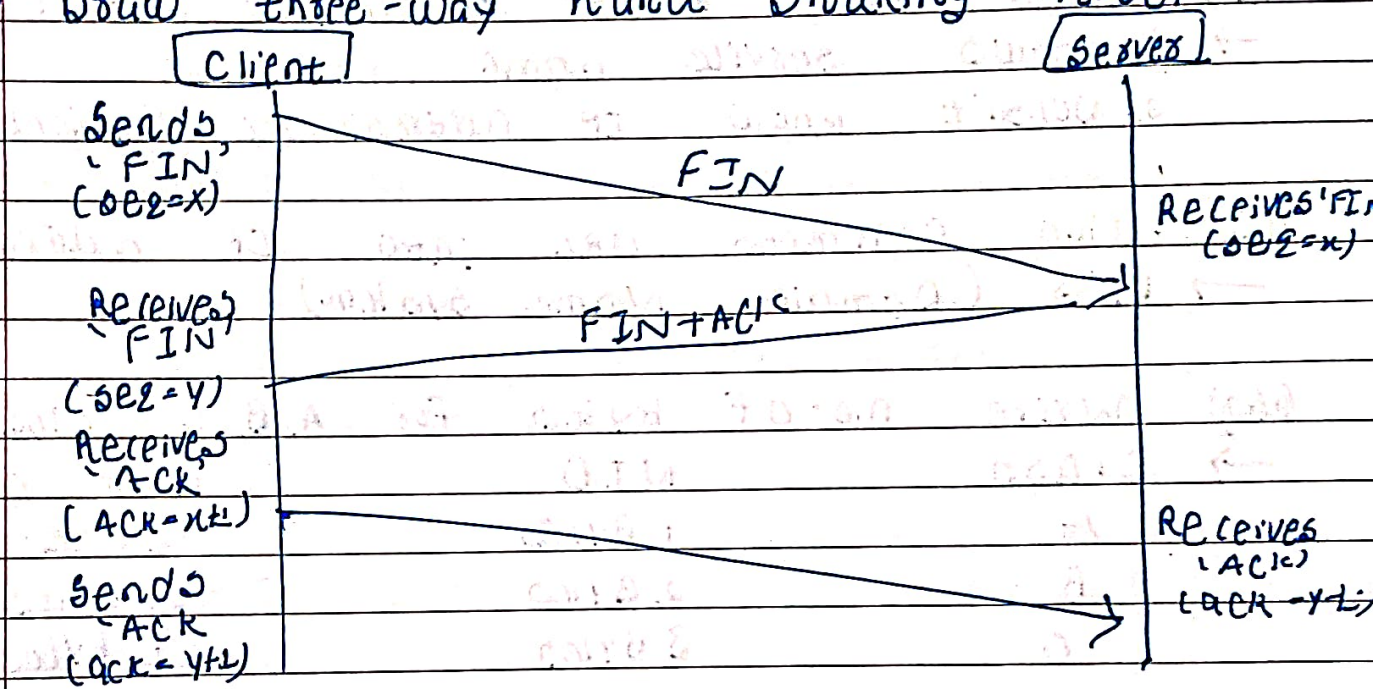
Q45) If we have a router, what are the block present in the router?

→



Q46) Draw three-way hand shaking model

→



Q47) How to Configure IP address for new PC?

→ Control Panel → Network & Internet → Adapter Setting → Right Click, Ethernet → properties → IPV4 → Enter IP, Subnetmask Gateway

Page No:
Date:

Q48) What are the private IP addresses
→ Refer Q10

Q49) What are the subnet mask for class A, B & C?
→

Class	subnet mask
A	255.0.0.0
B	255.255.0.0
C	255.255.255.0

Q50) What ARP knows & doesn't know?
→ 1) knows service name
2) Doesn't know IP address or physical path

Q51) Who converts URL into IP address
→ DNS (Domain Name System)

Q52) Write no. of bytes for A, B, C class
→

Class	NID	Host ID
A	1 Bytes	3 bytes
B	2 Bytes	2 bytes
C	3 Bytes	1 bytes

Q53) Difference between IPV4 & IPV6
→

	IPV4	IPV6
1)	32 bit	1) 128 bit
2)	Dotted decimal	2) Hexadecimal
3)	supports NAT	3) No need of NAT
4)	eg:- 192.168.0.1	4) eg: 2001.0DB8::1

Page No:
Date:

Q54) While using DNS which protocols are used in
→ DNS used UDP on port 53

Q55) No of port used for DNS
→ 53

Q56) No of ports used for HTTPS
→ 443

Q57) FTP uses two ports, HTTP uses one- why?
→ FTP uses:
1) Port 21 for control
2) Port 20 - Data
HTTP uses only port 80 for both control & data

Q58) Why TELNET is used?
→ For remote login and command execution on another computes

Q59) What is dependancy of TELNET?
→ Depends on TCP for reliable connection

Q60) What is dependancy of HTTP?
→ Depends on TCP for reliable data transfer

Q61) 128.16.201.0/26 - Find number of subnets
→ Subnet mask 126 = 255.255.255.192
- 64 address per subnet
- 4 subnets possible

Page No:
Date:

Q62) What is ARP & RARP

→

ARP	RARP
1) Address Resolution Protocol	1) Reserve Address Resolution protocol
2) Finds MAC from IP	2) Find IP from MAC

Q63) Difference between Broadband & Baseband

→

Baseband	Broadband
1) Single signal at a time	1) multiple signals
2) Digital transmission	2) Analog transmission
3) LAN	3) WAN / Internet

Q64) What is DSL line?

→ Digital subscribed line - Internet over telephone line using different frequency bands

Q65) Difference between MAC, IP & Port Addresses

→

Type	used for	example
MAC	physical address of NIC	00:14:22:01:23
IP	logical address	192.168.4.10
Port	Application address	80(HTTP), 21(FTP)

Q66) What is round trip time (RTT)?

→ It is the total time taken for a signal or packet to go from the source to the destination and back again to the source

Ex: used in TCP to measure network delay

Page No:
Date.

Q68) Who decides TTL?
→ TTL (Time to Live) is decided by the header (source device)

Q69) Header length of IPV4 and IPV6
→ • IPV4 header length: 20 to 60 bytes
• IPV6 header length: Fixed at 40 bytes

Q70) No of fields in IPV4 & IPV6
→ IPV4: 12 main fields
IPV6: 8 main fields (simplified format)

Q71) Difference between TCP & UDP
→

	TCP	UDP
1)	connection oriented	1) connection less
2)	Reliable	2) unreliable
3)	eg: web, Gmail	3) Video

Q72) Header length of TCP and UDP
→ • TCP header length: 20 to 60 bytes
• UDP header length: 8 bytes

Q73) For sending mail, are we using SNTP?
→ NO, for sending mail we uses SMTP (Simple mail Transfer protocol)
SNTP is for time synchronization

Page No.
Date.

Q74) Difference between 10Base 2 & 10Base T

→

10Base 2	10Base T
1) Coaxial	1) Twisted Pair
2) 185m	2) 100m
3) Topology - Bus	3) Topology - Star
4) connector : BNC	4) Connector RJ-45

Q75) Connection between cable TV & PC

→ Cable — [Filter] —Coaxial— [TV]
Coaxial
[modem] — [PC]
Cat5

Q76) What is longform of Ping

→ PING (Packet internet Groper)

Q77) Connection between telephone line & PC

→ Telephone line — [modem] — [PC]

Q78) What type of encoding techniques are used in LAN

→ Manchester (differential)

Q79) For Facebook ⇒ uses https ⇒ Draw 3 way handshaking

→ refer Q46

Q80) What is symmetric & asymmetric cryptography write technical difference

→

Type	Symmetric	Asymmetric
Keys	Single key for encryption & decryption	Public key and Private key
Speed	Faster	Slower
Example	AES, DES	RSA, ECC

Q81) HTTPS - What security is provided

→ HTTPS provides security to data using SSL/TLS encryption ensuring

- Data Confidentiality
- Authentication
- Integrity.

Q82) Draw the cryptography model

→ Plain Text → Cipher Text → Plain text

Q83) Difference between substitution & RSA

Aspect	Substitution	RSA
Type	Symmetric	Asymmetric
Key	Same key used	Public & Private keys
Operation	Replaces letter or bits	Uses mathematical Encryption

Page No:
Date:

Q84) Write down IP range of class A, B, C, D

→ Refer Q10

Q85) Excluding IP, which IP, ~~other~~ protocols are used in network layer?

→ 1) ICMP (Internet control message protocol)
2) IGMP (Internet Group management protol)
3) ARP (Address Resolution protocol)
4) RARP (Reverse Address Resolution Protol)

Q86) In application layer, which protocols are used and write service provided by it.

→ 1) HTTP/ HTTPS, - web browsing
2) FTP:- File transfer
3) SMTP, POP3, IMAP :- Email resolution
4) DNS :- Domain name resolution
5) Telnet:- Remote login access

Q87) What is bit stuffing?

→ Bit stuffing is the process of adding extra bits into a data stream to break up patterns that might be misinterpreted as control.

Q88) What is Sliding window concept?

→ Sliding window is a flow control mechanism used in data link and transport layer. It allows multiple frames to be sent before receiving an acknowledgment

Page No:
Date:

Q90) Different algorithms used to find path
→ 1) Shortest path Algorithm (Dijkstra's Algorithm)
2) Bellman-ford Algorithm
3) floyd-warshall Algorithm
4) Link state Algorithm.

Q91) Different routing protocols
→ 1) RIP (Routing information protocol)
2) OSPF (Open Shortest path first)
3) BGP (Border Gateway protocol)

Q92) What are threats to data?
→ • viruses and worms
• Data theft
• unauthorized access
• Tampering or modification of data

Q93) Difference between TTL and number of hops (IPV4 & IPV6)
→

Parameter	IPV4	IPV6
TTL (Time to Live)	field used to limit packet lifetime by decrementing at each hop	Replaced by Hop Limit field which serves the same purpose
unit	seconds or hops	Hops only

Page No:
Date.

Q94) What are the different browsers used in your college?

→ • Google chrome
• Mozilla Firefox
• Microsoft edge

Q95) What are the web server we are using?

→ • Apache HTTP server
• Microsoft IIS (Internet information services)
• Litespeed

Q96) How many number of headers can be given in HTML programming?

→ HTMP provides 6 levels of headers, from <h1> to <h6>, where <h1> is the largest and <h6> is the smallest

Q97) How to create a web page?

→ By using HTML

• Steps
1) Open a text editor
2) Write HTML code
3) Save the file with .html extension
4) Open it in a browser to view the web page

Q98) What is static page and dynamic web page?

→ Static web page:
The content is fixed and same for every user.

- Dynamic web page
  The content changes according to user input or time

Q99) Some sites are blocked in lab but not in staff room. Why?
→ Because of network restrictions and firewall policies

Q100) Google.com or facebook.com

Q101) In which particular applications UDP is used?
→ UDP is used in applications where speed is more important than reliability
- Video streaming
- online gaming
- DNS queries

Q102) In which particular applications TCP is used?
→ TCP is used in applications requiring reliable and ordered data transfer

Q103) What are the special IP addresses?
→ 1. 127.0.0.1 :- Loopback address
- 0.0.0.0 - unspecified address

Page No:
Date:

- 255.255.255.255 :: ~~Unspe~~ Broadcast address

Q104) Difference between wired and wireless network

→

Feature	Wired network	Wireless Network
1) Medium	Copper/Fiber Cable	Radio waves
2) Speed	Generally faster	Slightly slower
3) Security	more secure	less secure
4) Example	Ethernet LAN	Wifi

Q105) What are different IEEE standards?

→ 1) IEEE 802.3 - Ethernet (wired LAN)
2) IEEE 802.11 - Wi-Fi
3) IEEE 802.15 - Bluetooth
4) IEEE 802.16 - WiMAX
5) IEEE 802.6 - Token Ring

Q106) Who works as the client in your PC?

→ Web browsers (like chrome, Firefox, Edge) act as clients

Q107) Does ARP work on local network?

→ Yes ARP works only on local networks (LAN)

Q108) ARP broadcasts the address - what is broadcast address?

→ Broadcast address is used to send data to all devices in the network

- IPV4 broadcast address: 255.255.255.255
- MAC address: FF:FF:FF:FF:FF:FF

Q10) How to represent MAC address?

→ A MAC address is a 48 bit (6 bytes) hardware address represented in hexadecimal format
Example: 00:1A:2B:3C:40:5F

Q11) Why we have error control and flow control in both transport layer and data link layer?

→ Because:
- Data Link Layer: Handles errors and flow control between directly connected nodes
- Transport Layer: Provides end-to-end reliability between source and destination across the entire network
- Both ensure accurate and efficient data transfer but operate at different scopes

Q111) Write down range of port numbers (Registered, Dynamic & well-known).

→ - Well-known port: 0-1023 (used by system processes)
- Registed Ports: 1024-49151 (used by user processes or apps)
- Dynamic / Private Ports: 49152-65535 (used for temporary communication)

Page No.
Date.

Q112) For which layer it is used and what type of address those are called (FF:FF:FF:FF:FF:FF)

→ • This address Belong to the Data Link Layer
• It is a Broadcast MAC address used to send frames to all devices in a local network

Q113) Who assigns the port numbers?

→ Port numbers are assigned by IANA (Internet Assigned Numbers Authority)

Q114) What is meant by well-known port number?

→ Well Known port number (0-1023) are reserved for standard network services and protocols such as

- HTTP - 80
- HTTPS: 443
- FTP - 21
- DNS - 53
- SMTP - 25

Q115) Difference between TCP and UDP

→

Feature	TCP	UDP
connection	Connection-oriented	Connectionless
Reliability	Reliable	unreliable
flow control	Yes	No
Speed	Slower	Fast too
Example	HTTP, FTP	DNS, Video Streaming

Q116) While doing ping which protocols are used (Application / Transport / Network)?

→ Ping used ICMP (Internet control message protocol) which works at the Network Layer

Q117) What is specific address?

→ A specific address refers to a unique MAC or IP address used to identify a particular device in a network.

Q118) What is the header length of TC and IP?

→ • TCP header length: minimum 20 bytes, maximum 60 bytes

- IP header length: minimum 20 bytes, maximum 60 bytes

Q119) What is content of MAC header?

→ The MAC header contains

1) Destination MAC Address
2) Source MAC Address
3) Type/Length field

Q120) What is content of Data Link Layer header?

→ It includes.

- Source and destination MAC addresses
- Type field (e.g IPV4, ARP)
- Frame check sequence (FCS) for error detection

Page No.
Date.

Q121) What is meant by "ipconfig /all"?
→ The command ipconfig /all displays detailed network configuration including:
- IP address
- Subnet mask
- Default gateway
- MAC address
- DNS and DHCP details

Q122) What is meant by tracert command?
→ Traceroute is a network diagnostic tool used to display the path and hops that packets take to reach a destination

Q123) Simply to connect two PCs which cable is used?
→ Crossover cable is used to directly connect two PCs without a switch or hub.

Q124) 172.31.0.0 / 172.31.255.255 What is significance?
→ • These are private IP addresses from class B range
• Used for local networks (LAN), not routable on the internet

Q125) Bridge and Switches belong to which layer?
→ Bridge and Switches operate at the Data Link layer

Page No:
Date:

Q126) Difference between CSMA/CA and CSMA/CD

→

Feature	CSMA/CD	CSMA/CA
1) Full Form	Carrier Sense Multiple Access with Collision Detection	Carrier Sense Multiple Access with Collision Avoidance
2) Used in	Wired networks	Wireless networks
3) Function	Detects collision and retransmits	Avoids collision by waiting and sending

Q127) Can Bluetooth data be hacked?

→ Yes, Bluetooth data can be hacked if devices are not properly secured.

Q128) Company wants 1000 subnets (172.16.10.10) what is mask & number of hosts?

→ Base IP: 172.16.10.10

To create 1000 subnets, borrow 10 bits ($2^{10} = 1024$)

new subnet mask = 255.255.255.192 (/26)

Hosts per subnet = $2^6 - 2 = 62$ hosts

Q129) Write down browsers and corresponding web severs

→

Browser	Corresponding web server
Google Chrome	Apache, Nginx
Microsoft Edge	IIS (Internet information services)
Mozilla Firefox	Apache, Nginx

Page No.
Date.

Q130) Difference between IPV6 and IPV4?
→ Refer Q93

Q131) Write RSA algorithm for encryption and decryption
→ 1) Select two prime numbers (P, Q)
2) Compute $n = P \times Q$
3) Compute $\varphi(N) = (P-1)(Q-1)$
4) Choose e such that $1 < e < \varphi(n)$ and gcd$(e, \varphi(n)) = 1$
5) Compute $d = e^{-1} \bmod \varphi(n)$
6) Encryption $C = M^e \bmod n$
7) Decryption $M = C^d \bmod n$

Q132) Difference between network printer and shared printer.

Feature	Network Printer	Shared Printer
1) Connection	Directly connected to network	connected to a computer and shared
2) Accessibility	Accessible to all network users	Accessible through the host computer only
3) Dependency	Independant	Dependent on host sys

Q133) IP address - From which class are used for multicasting?
→ Multicast addresses belong to Class D IP range
224.0.0.0 to 239.255.255.255

Page No:
Date:

Q134) Write significance of IP address 172.16.26.25/172.16.0.0

→ • These belong to Private IP range (Class B)
- Used within LANs for internal communication
- Not routable on the Public internet

Q135) Classful addressing mode: Find no. of subnets, hosts & ranges.

→ Example

1) 192.168.1.10/30
- Subnet bits: 2 → No of subnets: 4
- Hosts/subnet: $2(2^2-2)$
- Range: 192.168.1.8 - 192.168.1.11

2) 192.168.10.11/28
- Subnet bits 4 → Subnet: 16
- Hosts/subnet: 14
- Range: 192.168.10.0 - 192.168.10.15

3) 200.10.10.10/26
- Subnet bit 2 → subnets: 4
- Hosts/subnet: 62
- Range: 200.10.10.0 - 200.10.10.63

4) 193.168.11.10/29
- Subnet bit: 5 → Subnets: 8
- Hosts/subnet: 6
- Range: 193.168.11.8 - 193.168.11.15

Q136) only find no of subnets & range of first 2 subnets

1) 210.10.11.12/29 → subnets: 8, Range 1st two:
- 210.10.11.0 - 210.10.11.7
- 210.10.11.8 - 210.10.11.15

2) 211.10.11.12/30 → subnets: 64, Range 1st two
- 211.10.11.0 - 211.10.11.3
- 211.10.11.4 - 211.10.11.7

Q137) Who provides best effort delivery?
→ IP (internet protocol) provides best effort delivery

Q138) What is meant by best effort delivery?
→ No gurantee of delivery, order, or error-free transmission - Packets may be lost or delayed

Q139) Why we use ICMP (Internet Control message protocol)
→ used for error reporting and diagnostic functions (eg:- Ping, unreachable messages)

Q140) Why we used IGMP?
→ used for managing multicast group membership

Q141) Which next transport layer protocol supports voice over the internet?
→ SCTP (stream control Transmission protocol) supports voice, video and data

Q142) How MAC Addresses are represented?
→ 48 bits (6 bytes), written in hexadecimal (eg: 00:1A:2B:3C:4D:5E)

Page No:
Date:

Q143) Long form of URL
→ Uniform Resource Locator

Q144) Guided & unguided media
- Guided: Twisted pair, Coaxial, optical fiber
- unguided: Radio waves, microwaves, infrared

Q145) Type of connector used for UTP.
→ RJ-45 (Registered Jack 45)

Q146) What is reflection & refraction in fiber optic cable?
→ - Reflection: Light bounces inside the core
- Refraction: Bending of light at core-cladding boundary.

Q147) Advantages of Fiber optic cable
→ 1) High bandwidth
2) immune to EMI
3) Lightweight & secure
4) Long-distance transmission.

Q148) Types of switching.
→ 1) circuit switching
2) Packet switching
3) message switching

Q149) Three phases of circuit switching
→ 1) Circuit establishment
2) Data transfer
3) Circuit termination

Page No:
Date:

Q150) What is virtual circuit number?
→ unique identifier used in virtual circuit switching to identify connections

Q151) What is modem?
→ Device that modulates & demodulates digital data into analog signals and vice versa.

Q152) What is character-oriented protocol?
→ uses special characters to mark frame boundaries.
Example format:
| Flag | Header | Data | Trailer | Flag |

Q153) What is flag (1 byte)?
→ used to mark start and end of a frame.
Example:- 01111110 (in HDLC)

Q154) What is byte stuffing & unstuffing?
→ 1) Byte stuffing:- Adding an escape (ESC) character before control bytes in data
2) unstuffing :- Receiver removes these ESC bytes.

Q155) What is bit stuffing?
→ Adding an extra '0' after five consecutive 1s to prevent flag imitation

Q156) In data link layer, which protocols are used for noisy channel?
→ Stop and wait ARQ, Go-Back-N ARQ, selective Repeat ARQ

Page No:
Date:

Q157) Explain sliding window concept
→ A method of flow control where multiple frames can be sent before receiving an acknowledgement

Q158) In which protocol sliding window is used at sender & receiver side?
→ Go-Back-N ARQ and Selective Repeat ARQ

Q159) What is piggybacking?
→ Technique of combining data & acknowledgement in one frame to improve efficiency.

Q160) ~~Ans~~ Three types of frames used in HDLC?
→ 1) I- frame (information)
2) S- fram (supervisory)
3) U- frame (unnumbered)

Q161) Which notation is used for IP addresses?
→ Dotted Decimal notation (eg: 192.168.1.1)

Q162) Which classes of addressing are used for multicasting?
→ Class D (224.0.0.0 to 239.255.255.255)

Q163) Write down private addresses.
→ 1) Class A: 10.0.0.0 - 10.255.255.255
2) Class B: 172.16.0.0 - 172.31.255.255
3) Class C: 192.168.0.0 - 192.168.255.255

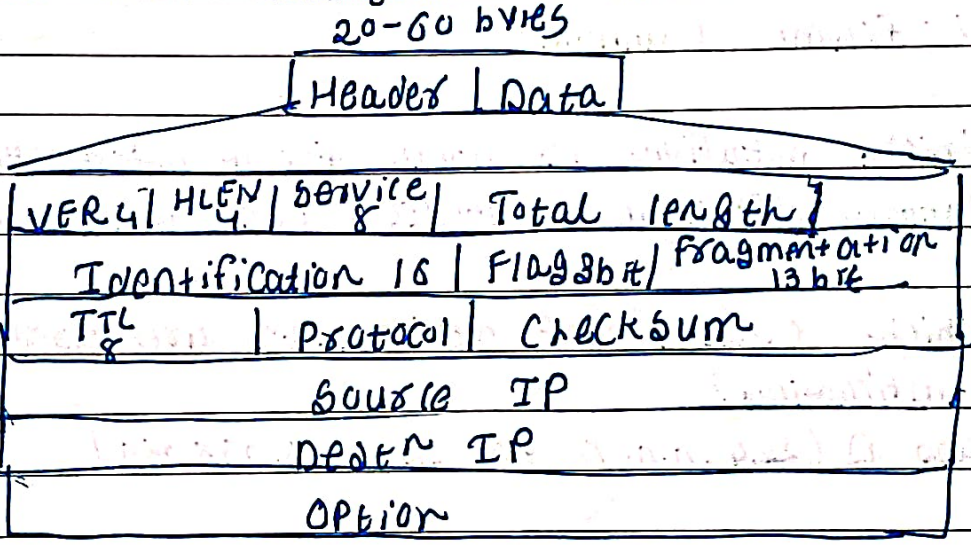
Page No.
Date

Q164) What is multicast address in IPv6?
→ It start with FF00::/8 ; used to deliver packets to multiple hosts.

Q165) What are reserved addresses in IPv6?
→ 1) ::1 → loopback address
2) :: → unspecified address
3) FE80::/10 → Link-local address
4) FF00::/8 → Multicast address

Q166) What is ToS in routing?
→ Type of service [TOS]: field in IP header indicating priority & quality of service

Q167) Draw IPv4 datagram format
→



Q168) What is MTU (Maximum Transmission unit)?
→ MTU is the largest size of a data packet that can be transmitted over a network medium without fragmentation.
- It is measured in bytes
- Example: Ethernet MTU = 1500 bytes

Page No:
Date:

Q169) What is fragmentation?

→ Fragmentation is the process of breaking a large IP packet into smaller fragments so that they can pass through a network with a smaller MTU.

- Each fragment has its own header and is reassembled at the destination.

Q170) Flags used in fragmentation.

→ • There are 3 fragmentation flags in the IP header

1) Reserved bit (0) - Always set to 0
2) Don't fragment (DF) - If 1, the packet cannot be fragmented
3) More fragments (MF) - If 1, more fragments follow; if 0, its the last fragment.

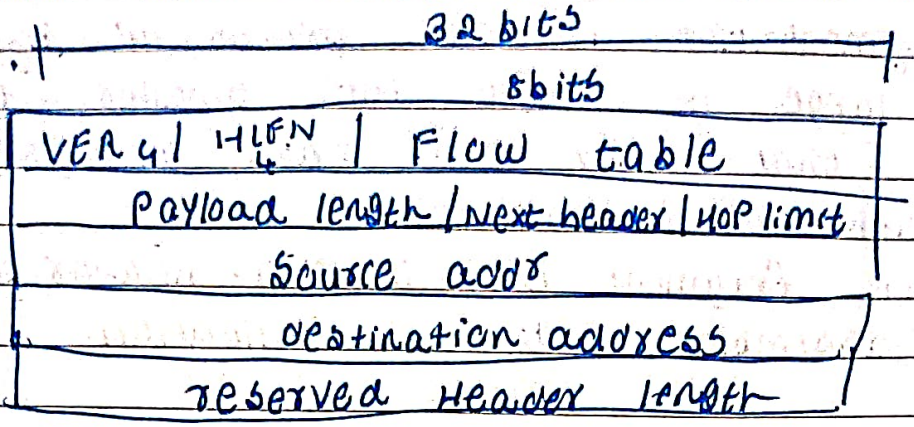
Q171) Advantages of IPV6.

→ 1) Larger address space (128-bit)
2) Simplified header format
3) Better security
4) Efficient routing with hierarchical addressing
5) Support for auto configuration
6) NO need for NAT (Network Address Translation)

Q:

Q172) Draw and frame format of an IPV6 datagram

→



Q173) What is flow label in IPV6?

→ The flow label field in IPV6 is a 20-bit field used to identify packets that belong to the same flow for special handling by routers.

Q174) Comparision between IPV4 and IPV6 headers.

→

Feature	IPV4	IPV6
1) Address size	32 bit	128 bit
2) Header length	variable (20-60 bytes)	Fixed (40 bytes)
3) checksum	Present	Not used
4) Security	optional	Built in
5) configuration	Manual/DHCP	Auto configuration
6) Broadcast	supported	Not supported

Q175) Write three transition strategies from IPV4 to IPV6

→ 1) Dual Stack
2) Tunneling
3) Header translation

Page No.
Date

Q176) What is address mapping?

→ • Address mapping: ARP request is broadcast and ARP reply is unicast.

Q177) What is the difference between RARP, BOOTP & DHCP?

→ • RARP:- used for broadcasting at data link layer, maps physical (MAC) to IP address
• BOOTP:- used for booting a diskless workstation and getting configuration from a server.
• DHCP:- Extension of BOOTP; dynamically assign IP addresses and configuration parameters to hosts.

Q178) BOOTP - which protocol is used at the transport layer?

→ UDP

Q179) Different errors or reporting messages in ICMP?

→ 1) Destination unreachable
2) Source Quench
3) Time Exceeded
4) Redirect.

Q180) Why do we use the Ping Command?

→ To check if the host is alive and responding

Q181) When we ping "thdu.edu", what is the result

→ 1) Round Trip Time (RTT)
2) TTL (Time to Live)
3) Packets sent/received/lost

4) Average time in ms

Q182) ~~traceroute~~ ~~with~~ traceroute thdo.edu - What is the result?

→ 1) Display each hop and the destination IP address
2) shows the route path packets take to the destination

Q183) Difference between ICMPV4 and ICMPV6

Function	ICMPV4	ICMPV6
1) Version	4	6
2) Destination unreachable	yes	Yes
3) Source Quench	yes	no
4) Redirect	yes	Yes
5) Time Exceeded	yes	Yes

Q184) What are different forwarding techniques?

→ 1) Fixed HOP method
2) shortest path method
3) Route method
4) ~~Fixe~~ Next specific method
5) Default method

Q185) What is intra and inter-domain Routing?

→ Intra-domain Routing:- Routing within a single autonomous system (AS).
2) Inter-domain Routing:- Routing between different autonomous system

Page No.
Date.

Q186) What are routing protocols?

→ 1) Distance vector protocol:- RIP (Routing information protocol)

2) Link state protocol :- OSPF (Open shortest path first)

3) Path vector protocol: BGP (Border gateway protocol)

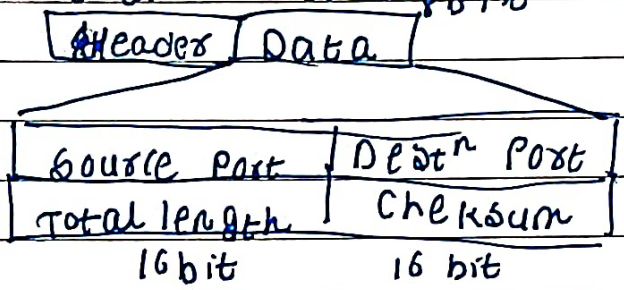
Q187) Who divides the port numbers into three ranges?

→ IANA → Internet Assigned Numbers Authority

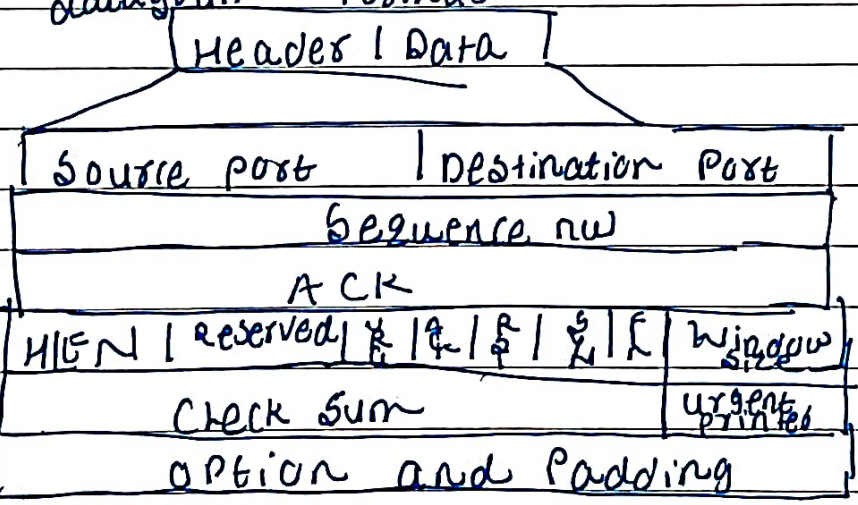
Q188) What is socket address

→ It is combination of IP & port address

Q189) UDP datagram format



Q190) TCP datagram format



Q191) Show three way handshaking

→ Refer Q no 46