# 2 Marks Questions and Answers
## MC1628 – TCP/IP Protocol Suite

1. What are called network support layers?

The physical, data link, and network layers are the network support layers.

2. What are called User support layers?

The session, presentation, and application layers are the user support layers.

3. Why we need Transport layer?

The transport layer links the network support layers and the user support layers.

4. What is the purpose of Physical layer?

The physical layer coordinates the functions required to transmit a bit stream over a physical medium.

5. What is the use of Data link layer?

The data link layer is responsible for delivering data units from one station to the next without errors.

6. What is the need for Network layer?

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

7. What is the purpose of seven layer?

The transport layer is responsible for the source-to-destination delivery of the entire message.

The session layer establishes, maintains, and synchronizes the interactions between communicating devices.

The presentation layer ensures interoperability between communicating devices through transformation of data into a mutually agreed-upon format.

The application layer enables the users to access the network.

8. What is PPP?

The Point-to-Point Protocol (PPP) was designed for users who need a reliable

point-to-point connection to the Internet. PPP operates at the physical and data link layers of the OSI model.

9. What is LANE ?

Local Area Network Emulation (LANE) is a client/server model that allows the use of ATM technology in LANs.

10. What are the servers included in LANE?

LANE software includes LAN emulation client (LEC), LAN emulation configura tion server (LECS), LAN emulation server (LES), and broadcast/unknown server (BUS) modules.

11. What is subnetting ?

Subnetting divides one large network into several smaller ones. Subnetting adds an intermediate level of hierarchy in IP addressing.

12. What is meant by masking ?

Masking is a process that extracts the network address from an IP address. Subnet masking is a process that extracts the subnetwork address from an IP address. A network or subnet address is obtained from applying the bit-wise AND operation on the IP address and the mask.

13. What is supernetting?

Supernetting combines several networks into one large one.

14. What is meant by connectionless protocol?

The IP protocol is a connectionless protocol. Every packet is independent and has no relationship to any other packet.

15. What is direct delivery?

The delivery of a packet is called direct if the deliverer (host or router) and the destination are on the same network.

16. What is indirect delivery ?

The delivery of a packet is called indirect if the deliverer (host or router) and the destination are on different networks

17. What is the function of routing table?

Every host or router has a routing table to route IP packets. In next hop routing instead of a complete list of the stops the packet must make only the address of the next hop is listed in the routing table. In network specific routing all hosts on a network share one entry in the routing table. In host-specific routing the full IP address of a host is given in the routing table. In default routing, a router is assigned to receive all packets with no match in the routing table.

18. What is static and dynamic routing ?

A static routing table's entries are updated manually by an administrator. A dynamic routing table's entries are updated automatically by a routing protocol.

19. What are the fields included in routing table?

The routing table can consist of seven fields: a mask, a destination address, a next-hop address, flags, a reference count, a use, and an interface. The routing module applies the mask, row by row, to the received destination address until a match is found. Classless addressing requires hierarchical and geographical routing to prevent immense routing tables.

20. What is the maximum length of a datagram?

The maximum length of a datagram is 65,535 bytes.

21. What is Maximum Transfer Unit ?

The MTU is the maximum number of bytes that a data link protocol can encapsulate. MTUs vary from protocol to protocol.

22. What is Fragmentation?

Fragmentation is the division of a datagram into smaller units to accommodate the MTU of a data link protocol. The fields in the IP header that relate to fragmentation are the identification number, the fragmentation flags, and the fragmentation offset. The IP datagram header consists of a fixed, 20-byte section and a variable options section with a maximum of 40 bytes.

23. How the errors are detected in IP?

The error detection method used by IP is the checksum. The checksum uses one's complement arithmetic to add equal-size sections of the IP header. The complemented result is stored in the checksum field. The receiver also uses one's complement arithmetic to check the header.

24. What are the modules and tables in IP package?

An IP package can consist of the following: a header-adding module, a processing module, a routing module, a fragmentation module, a reassembly module, a routing table, an MTU table, and a reassembly table.

25. What is the purpose of OSI Model?

The seven-layer OSI model provides guidelines for the development of universally compatible networking protocols.


26. Explain the purpose of various layers?

The physical layer coordinates the functions required to transmit a bit stream over a physical medium.The data link layer is responsible for delivering data units from one station to the next without errors. The network layer is responsible for the source-to-destination delivery of a packet across multiple network links. The transport layer is responsible for the source-to-destination delivery of the entire message. The session layer establishes, maintains, and synchronizes the interactions between communicating devices. The presentation layer ensures interoperability between communicating devices through transformation of data into a mutually agreed-upon format. The application layer enables the users to access the network.

27. Explain the three types of addresses in TCP/IP?

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. The physical address, also known as the link address, is the address of a node as defined by its LAN or WAN. The IP address uniquely defines a host on the Internet. The port address identifies a process on a host.

28. What is ATM?

Asynchronous Transfer Mode (ATM) is the cell relay protocol designed to support the transmission of data, voice, and video through high data rate transmission media such as fiber-optic cable.

29. Explain connecting devices?

Connecting devices can connect segments of a network together; they can also connect networks together to create an internet.

30. Explain various types of connecting devices?

There are five types of connecting devices: repeaters, hubs, bridges, routers, and switches. Repeaters regenerate a signal at the physical layer. A hub is a multiport repeater. Bridges have access to station addresses and can forward or filter a packet in a network. They operate at the physical and data link layers. Routers determine the path a packet should take. They operate at the physical, datalink, and network layers. A two-layer switch is a sophisticated bridge; a three-layer switch is a sophisticated router.

31. What is IP address?

The Internet address (or IP address) is 32 bits (for IPv4) that uniquely and universally defines a host or router on the Internet. The portion of the IP address that identifies the network is called the netid. The portion of the IP address that identifies the host or router on the network is called the hostid. An IP address defines a device's connection to a network.

32. What is Unicast, Multicast and Broad cast communication?

Unicast communication is one source sending a packet to one destination. Multicast communication is one source sending a packet to multiple destinations. Hosts with the same multicast address can either be on the same network or on different networks. Multicast addresses are often used for information retrieval and conferencing purposes. Broadcast communication is one source sending a packet to all hosts on its network.

33. What is IETF?

The Internet Engineering Task Force (IETF) is a forum of working groups responsible for identifying operational problems and proposing solutions to these problems.

34. What is IRTF?

The Internet Research Task Force (IRTF) is a forum of working groups focusing on long-term research topics related to Internet protocols, applications, architecture, and technology.

35. What is the purpose of NIC?

The Network Information Center (NIC) is responsible for collecting and distributing information about TCP/IP protocols.

36. What is the purpose of ISOC?

The Internet Society (ISOC) promotes research and other scholarly activities relating to the Internet.

37. What is Protocol?

A protocol is a set of rules that governs data communication; the key elements of a protocol are syntax, semantics, and timing.

38. What is Standards? What are the organizations involved in standard creation committee?

Standards are necessary to ensure that products from different manufacturers can work together as expected. The ISO, ITU-T, ANSI, IEEE, and EIA are some of the organizations involved in standards creation.

39. What is process-to-process communication?

The IP is responsible for communication at the computer level(host-to-host). As a network layer protocol, IP can deliver the message only to the destination computer. However, this is an incomplete delivery. The message still needs to be handed to the correct process. This is where a transport layer protocol such as UDP takes over. UDP is responsible for delivery of the message to the appropriate process.

40. What is classless addressing?

In classless addressing, there are variable-length blocks that belong to no class. The entire address space is divided into blocks based on organization needs.

41. What is Encapsulation and De-capsulation ?

To send a message from one application program to another, the TCP/UDP protocol encapsulates and de-capsulate messages.

42.  What is Multiplexing and De-multiplexing?

In the TCP/IP protocol suite, there is one TCP but there are several application programs that may want to use its services. To handle this situation TCP does multiplexing and de-multiplexing.

43. Explain buffering?

TCP creates sending and receiving buffers for each connection. TCP uses a buffer to store the stream of data coming from the sending application program. The receiving TCP also buffer data when they arrive and deliver them to the application program.

44. What is connection establishment?

TCP transmit data in full-duplex mode, when two TCP's in two machines are connected they are able to send segments to each other simultaneously. This implies that each party must initialize communication and get approval from the other party before any  data transfer is called connection establishment.

45. What is connection termination?

Any of the two parties involved in exchanging data can close the connection. When connection in one direction is terminated, the other party can continue sending data in the other direction. Therefore both machines are needed to close the connection in both direction.

46.  What is Static and Dynamic Routing?

A static routing table's entries are updated manually by an administrator. A dynamic routing table's entries are updated automatically by a routing protocol.

47. What is the purpose of client-server model?

The purpose of a network, or an internetwork is to provide services to end users. A user at a local site wants to receive a service from a computer at a remote site. To achieve this a computer runs a program to request a service from another program and also provide service to another computer. This means that two computer connected by an internet, must each run a program, one to provide a service and one to request a service.

48. What is concurrency in server?

A concurrent server can process many request at the same time and can share its time between many request.

49. What is BOOTP?

BOOTSTRAP Protocol is a client/server protocol designed to provide the following four information for a diskless computer or a computer that is booted for the first time.

IP address, Subnet mask, IP address of a router, IP address of a name server.

50. What is DHCP?

The Dynamic Host Configuration Protocol has been derived to provide dynamic configuration. DHCP is also needed when a host moves from network to network or is connected and disconnected from a network.

51. What is DNS?

Domain name service is the method by which Internet address in mnemonic form such as sun.it.ac.in are converted into the equivalent numeric IP address such as 134.220.4.1. To the user and application process this translation is a service provided either by the local host or from the remote host via the Internet. The DNS server may communicate with other internet DNS server if it cannot translate the address itself.

52. What is Fully Qualified Domain Name?

If a label is terminated by a null string is called a Fully Qualified Domain Name.

Eg. Excellect.oprt.nit.com.

53. What is Partially Qualified Domain Name?

If a label is not terminated by a null string is called Partially Qualified Domain Name.

Eg. Excellent

54. What is Generic Domains?

Generic domain define registered hosts according to their generic behaviour. Each node in the tree defines a domain, which is an index to the domain name space database.

Eg.    com – Commercial organizations

        edu -  Educational institutions

        gov  - Government institutions

55. What is Country Domain?

The country domain section follows the same format as the generic domains but uses two characters country abbreviations.

Eg.  in  -  India

us  -   United States

uk  - United Kingdom

56. What are the modules and tables are in IP package?

An IP package can consist of the following: a header-adding module, a processing module, a routing module, a fragmentation module, a reassembly module, a routing table, an MTU table, and a reassembly table.

57. Why do we need subnetting of a network?

Subnetting divides one large network into several smaller ones

58. What is the format of UDP packet?Explain.

Header and data. Header contains: Source port number, Destination port number, Total length, Checksum.

59. Describe the various fields in IP Header format.

The fields in the IP header that relate to fragmentation are the identification number, the fragmentation flags, and the fragmentation offset.

60. Give the importance and working of DHCP.

The DHCP has been devised to provide dynamic configuration. DHCP is an extension to BOOTP.

61. List the various timers used in TCP.

Retransmission, Persistence, Keep alive and Time-waited.

62. How is a connection established and terminated in TCP?

Three way handshaking and four way handshaking.

63. What is Fully Qualified Domain name?

If a Label is terminated by a null string, it is called a fully qualified domain name (FQDN). An FQDN is a domain name that contains the full name of a host. It contains all labels, from the most specific to the most general, that uniquely defines the name of the host.

64. What is Partially Qualified Domain Name?

If a label is not terminated by a null string, it is called a partially qualified domain name (PQDN). A PQDN starts from a node, but it does not reach the root. It is used when the name to be resolved belongs to the same site as the client. Here the resolver can supply the missing part, called suffix, to create an FQDN.

### 65. What is Zone?

What a server is responsible for or has authority over is called a zone. If a server accepts responsibility for a domain and does not divide the domain into smaller domains, the "domain" and the "zone" refer to the same thing.

### 66. What is root server?

A root server is a server whose zone consists of the whole tree. A root server usually does not store any information about domains but delegates its authority to other servers, keeping references to those servers.

### 67. What is simple mail transfer protocol?

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.

### 68. What is User Agent?

A user Agent is defined in SMTP, but the implementation details are not. The UA is normally a program used to send and receive mail. Popular user agent programs are MH, Berkeley Mail, Elm, Zmail, and Mush.

### 69. What is Mail Transfer Agent?

The actual mail transfer is done through mail transfer agents (MTAs). To send mail, a system must have the client MTA, and to receive mail, a system must have a server MTA.

### 70. Describe mail address.

The mail address consists of two parts: a local address (user mailbox) and a domain name. The form is localname@domainname

### 71. What are steps to transfer a mail message?

The steps in transferring a mail message are
   a) Connection establishment
   b) Mail transfer
   c) Connection termination

### 72. What is MIME?

Multipurpose Internet Mail Extension (MIME) is an extension of SMTP that allows the transfer of multimedia messages.

### 73. What is POP?

Post Office Protocol, version3 (POP3) and Internet Mail Access Protocol version4 (IMAP4) are protocol used by a mail server in conjunction with SMTP to receive and hold mail for hosts.

### 74. What is the purpose of using Alias?

An alias allows one user to have multiple email addresses or many users to share the same mail address.

75. What is SNMP?

The Simple Network Management Protocol (SNMP) is a frame work for managing devices in an internet using the TCP/IP protocol suite. It provides a set of fundamental operations for monitoring and maintaining an internet.

76. What is Structure of Management Information?

The SMI is a component for network management. Its functions are, To name objects, To define the type of data that can be stored in an object, To show how to encode data for transmission over the network.

77. What is Management Information Base?

The MIB is the component used for network management. Each agent has its own MIB, which is a collection of all the objects that the manager can manage. The objects in the MIB are categorized under ten different groups: system, interface, address translation, ip, icmp, tcp, udp, egp, transmission, and snmp.

78. What are the services used by SNMP for other protocols?

SMI –Structure of Management Information and MIB – Management Information Base.

79. What is HTTP?

The Hypertext Transfer Protocol (HTTP) is a protocol used mainly to access data on the world wide web. The protocol transfers data in the form of plain text, hyper text, audio, video and so on.

80. List the format of Request message?

A request message consists of a request line, a header, and sometimes a body.

81. What is Proxy server?

A proxy server is a computer that keeps copies of responses to recent requests. In the presence of a proxy server, the HTTP client sends a request to the proxy server. The proxy server checks its cache. If the response is not stored in the cache, the proxy server sends the request to the corresponding server.

82. List the features of HTTP?

Persistent Connection and Non persistent Connection.

83. What are the organizations involved in Standard creation committee?

The ISO, ITU-T, ANSI, IEEE, and EIA are some of the organizations involved in standards creation.

84. What is ISOC?

The Internet Society (ISOC) promotes research and other scholarly activities relating to the Internet.

85. Who is IAB?

The Internet Architecture Board (lAB) is the technical advisor to the ISOC.

86. What is NIC?

The Network Information Center (NIC) is responsible for collecting and distributing information about TCP/IP protocols.

87. What is ICANN?

The Internet Corporation for Assigned Names and Numbers (ICANN), formerly known as IANA, is responsible for the management of Internet domain names and addresses.

88. What is NSP?

National service providers (NSPs) are backbone networks created and maintained by specialized companies.

89. What is ISP?

Local Internet service providers (ISPs) connect individual users to the Internet.

90. What is Forum?

Forums are special-interest groups that quickly evaluate and standardize new technologies.

91. Why we need Proxy server?

A proxy server is a computer that keeps copies of responses to recent requests. In the presence of a proxy server, the HTTP client sends a request to the proxy server. The proxy server checks its cache. If the response is not stored in the cache, the proxy server sends the request to the corresponding server.

92. How to Transfer a mail from one computer to another?

The steps in transferring a mail message are :Connection establishment, Mail transfer, Connection termination

93. What is the purpose of User Agent?

A user Agent is defined in SMTP, but the implementation details are not. The UA is normally a program used to send and receive mail. Popular user agent programs are MH, Berkeley Mail, Elm, Zmail, and Mush.

94. List the components of IP package?

An IP package can consist of the following: a header-adding module, a processing module, a routing module, a fragmentation module, a reassembly module, a routing table, an MTU table, and a reassembly table.

95. What are the difference fields in Routing table?

The routing table can consist of seven fields: a mask, a destination address, a next-hop address, flags, a reference count, a use, and an interface.

96. What is class less addressing?

Classless addressing requires hierarchical and geographical routing to prevent immense routing tables.

97. What are the fields Option Header contains?

The options header contains the following information: a code field that identifies the option, option length, and the specific data.

98. What are the operations carried out in Checksum?

The checksum uses one's complement arithmetic to add equal-size sections of the IP header. The complemented result is stored in the checksum field. The receiver also uses one's complement arithmetic to check the header

99. What is the size of MTU?

The MTU is the maximum number of bytes that a data link protocol can encapsulate. MTUs vary from protocol to protocol.

100. Why we need root server?

A root server is a server whose zone consists of the whole tree. A root server usually does not store any information about domains but delegates its authority to other servers, keeping references to those servers.

# 16 Marks Questions

1. Discus briefly the History of Internet.

Network is a grope of Connected, Communicated device such as computers and printer. An Internet is two or more networks that can communicate with each other .The most notable Internet is a collaboration of more than hundreds of thousands interconnected networks.

ARPANET, MILNET,CSNET,NSFNET,ANSNET & Internet  Today is ISPs,NSPs, RSPs.

2. Discus with the following

Standards Organizations – (i) Standard creation Committees ISO,ITU-T,ANSI,IEEE,EIA

(ii) FORUMS frime realy forum , ATM forum

(iii)Regulatory Agencies Federal Communications (FCC)

Internet Standards     (i)   maturity levels, Proposal std, draft standard, Internet standard, Historic, experiomental. Infornational.

Requirement levels, required, recommended, Elective, Limited use.

3. Explain the OSI model (open system interconnection)

Layers in the OSI model: Physical layer, Datalink layer, Network layer, Transport layer, Session layer, Presentation layer, Application layer.

4. Discuss with TCP/IP Protocol suite.

>Physical & Data link layer, Network layer(IP,ARP, RARP,ICMP,IGMP)

>Transport layer (UDP,TCP), Application layer (SMTP,FTP,DNS,SNMP)

5. Discuss briefly various connecting devices.

>LAN, WAN Repeaters, Bridges, Hubs, Routes and Switches.

6. Discuss various routing methods.

>Next-Hop routing, Network-Specific routing, Host-Specific routing, Default routing

7. Explain briefly the ARP package design.

>Packet format, Operations, ARP Package – cache table, queues, Output module, Input module, Cache-control module

8. Discuss with IP Package components and their interactions.

>Header-adding module, Processing module, Queues, Routing table, Routing module, MTU table, Fragmentation module, Reassembly table, Reassembly module

9. Discuss Internet Control Message Protocol (ICMP).

>Types of Messages

1. Error-reporting – Destination unreachable, Source Quench, Time Exceeded, Parameter problem, redirection.

2. Query – Echo request and reply, Timestamp request and reply, address-mark request and reply, Router solicitation and advertisement

10. Explain Internet Group Management Protocol (IGMP).

>IGMP Messages

1. Query – General and Special

2. Membership report

3. Leave report

11. Discuss briefly UDP operations.

>Connectionless services, Flow & Error control, Encapsulation and Decapsulation, Queuing, Multiplexing and Demultiplexing

12. Explain briefly UDP package components and their interactions.

>Control-block table, Input Queues, Control-block module, Input module, Output module

13. Explain briefly the services offered by TCP.

>Stream Delivery Service, Full-duplex service, Connection Oriented service, Reliable service

14. Discuss the various connection process carried out in TCP.

>Connection Establishment, Connection Termination

15. Explain briefly TCP package components and their interactions.

   Transmission control blocks, set of Timers, Main module, Input processing module, Output processing module

16. Explain briefly the Domain Name System with their various services.

   Domain Name Space

   1. Distribution of Name Space – Hierarchy of name server, Zone, root, primary and Secondary server

   2. DNS in the Internet – Generic domain, country domain, inverse domain

17. Discuss with the following

   TelNet –

   Rlogin -

18. Explain briefly Network Virtual Terminal  (NVT).


19. Discuss briefly File Transfer Protocol (FTP).

   Connections – Control Connection, Data Connection

   Communications – Communication over control and data connection

   Command processing

   File Transfer

20. Explain briefly Simple Mail Transfer Protocol services.

   Components of SMTP – User Agent (UA), Mail Transfer Agent (MTA)

   Commands and Response

   Mail Transfer Phases – Connection Establishment, Message Transfer, Connection Termination.

21. Discuss simple Network Management Protocol framework.

   SNMP Concept – managers and Agents

   Management Components – Structure of management Information (SMI), Management Information Base (MIB)

22. Explain the various functions of  Hypertext Transfer Protocol.

   HTTP Transaction, HTTP Message- request, response,

   Features of HTTP – persistent versus nonpersistent connection, proxy server.

23. Explain ARP and RARP operations and the use of ARP cache.

24. Explain the function of DHCP protocol with respect to DHCP server and DHCP enabled client communication.

25. List down the SNMP services and explain the server support for each.