Multiple Choice Q&A

1. What does the TCP congestion control algorithm use to adjust the window size?

   A) Bandwidth

   B) Round Trip Time

   C) Packet Loss

   D) Signal Strength

   Answer: C) Packet Loss

2. Which of the following is NOT a main characteristic of Quality of Service (QoS)?

   A) Jitter

   B) Bandwidth

   C) Latency

   D) Encryption

   Answer: D) Encryption

3. In internetworking, what device is used to connect networks that utilize different protocols?

   A) Router

   B) Switch

   C) Bridge

   D) Repeater

Answer: A) Router

4. Which protocol is primarily used at the Network Layer in the Internet Protocol Suite?

   A) TCP

   B) UDP

   C) IP

   D) Ethernet

   Answer: C) IP

5. Slow Start, Congestion Avoidance, Fast Retransmit, and Fast Recovery are phases of which congestion control protocol?

   A) TCP

   B) UDP

   C) ICMP

   D) ARP

   Answer: A) TCP

6. Which mechanism is used in QoS to manage data traffic to avoid jitter and latency?

   A) Traffic shaping

   B) Load balancing

   C) Packet filtering

   D) Port forwarding

Answer: A) Traffic Shopping

7. Which layer of the OSI model is responsible for path determination and logical addressing?

   A) Transport Layer

   B) Network Layer

   C) Data Link Layer

   D) Physical Layer

   Answer: C) Network Layer

8. IPv4 and IPv6 are protocols used in which layer of the Internet Protocol Suite?

   A) Application Layer

   B) Transport Layer

   C) Network Layer

   D) Link Layer

   Answer: C) Network Layer

9. What is the main goal of congestion control algorithms in a network?

   A) Increase data transfer speed

   B) Reduce the number of routers

   C) Prevent overload of network resources

   D) Encrypt data packets

Answer: C) Prevent overload of network resources

10. Which of the following QoS models is simplest to implement but offers the least granularity?

    A) Integrated Services

    B) Differentiated Services

    C) Best Effort

    D) MPLS

    Answer: C) Best Effort

11. What term describes the process of a router sending a packet through one of its ports based on the destination IP address?

    A) Routing

    B) Switching

    C) Bridging

    D) Broadcasting

    Answer: A) Routing

12. What type of address is used at the Network Layer to identify devices?

    A) MAC Address

    B) IP Address

    C) Port Number

    D) SSID

Answer: B) IP Address

13. Which TCP algorithm is used for congestion avoidance by increasing the congestion window size gradually?

    A) Slow Start

    B) Fast Recovery

    C) Additive Increase/Multiplicative Decrease (AIMD)

    D) Exponential Growth

    Answer: C) Additive Increase/Multiplicative Decrease (AIMD)

14. Resource Reservation Protocol (RSVP) is associated with which QoS model?

    A) Integrated Services

    B) Differentiated Services

    C) Best Effort

    D) MPLS

    Answer: A) Integrated Services

15. In the context of internetworking, which device operates at both the data link and the network layers of the OSI model?

    A) Hub

    B) Switch

    C) Router

    D) Repeater

Answer: C) Router

16. Which algorithm does TCP use to ensure data delivery in the correct order?

    A) Three-way handshake

    B) Sliding window

    C) Round robin

    D) Hashing

    Answer: B) Sliding window

17. In Quality of Service, what does the term 'latency' refer to?

    A) The time it takes for a data packet to travel from source to destination

    B) The amount of data that can be transmitted in a set amount of time

    C) The consistency of the data transmission rate

    D) The process of prioritizing certain types of data

    Answer: A) The time it takes for a data packet to travel from source to destination

18. Which device is used to interconnect networks with different architectures and protocols at the network layer?

    A) Hub

    B) Modem

    C) Gateway

D) Access Point

Answer: C) Gateway

19. The Internet Protocol (IP) is responsible for:

A) Physical transmission of data

B) Establishing a connection between hosts

C) Breaking down and reassembling data packets

D) Routing data packets across multiple networks

Answer: D) Routing data packets across multiple networks

20. Which of the following is a characteristic of the TCP protocol but not UDP?

A) Connection-oriented

B) Lightweight

C) Best-effort delivery

D) No guarantee of order delivery

Answer: A) Connection-oriented

21. What is the main purpose of the Time-to-Live (TTL) field in an IP packet?

A) Determine the maximum bandwidth

B) Limit the packet's lifespan to prevent infinite looping

C) Encrypt the packet for security

D) Indicate the priority of the packet

Answer: B) Limit the packet's lifespan to prevent infinite looping

22. What does the term 'backbone network' refer to in the context of internetworking?

    A) A private network inside a single organization

    B) The main pathway of high-speed connections in the internet

    C) The framework for wireless networking

    D) A redundant network for disaster recovery

    Answer: B) The main pathway of high-speed connections in the internet

23. In QoS, what is the purpose of 'bandwidth throttling'?

    A) To increase data transfer speeds

    B) To restrict the amount of data that a device can transmit or receive

    C) To protect the network from malicious attacks

    D) To convert analog signals into digital signals

    Answer: B) To restrict the amount of data that a device can transmit or receive

24. What distinguishes a router from a switch?

    A) A router operates on the physical layer, while a switch operates on the network layer

    B) A router connects devices within the same network, while a switch connects multiple networks

    C) A router uses IP addresses for routing, while a switch uses MAC addresses

D) A router is used for wireless connections, while a switch is used for wired connections

Answer: C) A router uses IP addresses for routing, while a switch uses MAC addresses

25. What is the key difference between IPv4 and IPv6?

A) IPv6 uses longer addresses than IPv4

B) IPv4 is faster than IPv6

C) IPv6 is less secure than IPv4

D) IPv4 supports more devices than IPv6

Answer: A) IPv6 uses longer addresses than IPv4

26. What is the primary function of the Transport Layer in the OSI model?

A) Path determination

B) Data formatting

C) End-to-end communication

D) Encryption of data

Answer: C) End-to-end communication

27. Which Transport Layer protocol provides connection-oriented service?

A) ICMP

B) IP

C) TCP

D) UDP

Answer: C) TCP

28. In TCP, what mechanism is used for flow control?

A) Sliding window

B) Packet filtering

C) Time-to-Live

D) Congestion avoidance

Answer: A) Sliding window

29. UDP is mainly used for applications that require:

A) Reliable data transfer

B) Speed over reliability

C) Connection-oriented service

D) High-level encryption

Answer: B) Speed over reliability

30. What is the purpose of a port number in the Transport Layer?

A) To identify the sending and receiving applications

B) To encrypt data

C) To determine the path of data transmission

D) To control the flow of data

Answer: A) To identify the sending and receiving applications

31. Which of the following is a function of connection management in TCP?

    A) Path selection

    B) Error detection

    C) Establishing, maintaining, and terminating a connection

    D) Data encryption

    Answer: C) Establishing, maintaining, and terminating a connection

32. TCP uses a 'three-way handshake' mechanism for:

    A) Error correction

    B) Connection establishment

    C) Data encryption

    D) Flow control

    Answer: B) Connection establishment

33. Which protocol is stateless and faster, but does not guarantee delivery?

    A) HTTP

    B) TCP

    C) UDP

    D) FTP

    Answer: C) UDP

34. In the context of TCP, what does 'congestion control' aim to prevent?

A) Unauthorized data access

B) Data corruption

C) Network overload

D) Data loss due to collisions

Answer: C) Network overload

35. What differentiates the Transport Layer from the Network Layer?

A) The Transport Layer is responsible for logical addressing, while the Network Layer is not.

B) The Transport Layer provides end-to-end communication, while the Network Layer provides hop-to-hop communication.

C) The Transport Layer is hardware-based, while the Network Layer is software-based.

D) The Transport Layer controls the physical network, while the Network Layer controls the data transfer.

Answer: B) The Transport Layer provides end-to-end communication, while the Network Layer provides hop-to-hop communication.

36. What is the main advantage of UDP over TCP?

A) It provides error correction.

B) It is connection-oriented.

C) It requires fewer resources.

D) It ensures data delivery in the correct order.

Answer: C) It requires fewer resources.

37. How does TCP handle lost packets?

    A) It ignores them.

    B) It requests retransmission.

    C) It sends them to a higher layer for handling.

    D) It replaces them with placeholder packets.

    Answer: B) It requests retransmission.

38. What is the role of sequence numbers in TCP?

    A) To secure the data transmission

    B) To determine the path of data

    C) To ensure data is received in the correct order

    D) To control the flow rate of data

    Answer: C) To ensure data is received in the correct order

39. Which type of communication does UDP support?

    A) Multicast

    B) Unicast only

    C) Broadcast

    D) All of the above

    Answer: D) All of the above

40. In the Transport Layer, what mechanism is used by TCP for error detection?

A) Encryption

B) Checksum

C) Token passing

D) Frequency hopping

Answer: B) Checksum

41. What does TCP's 'fast retransmit' feature do?

A) Increases transmission speed

B) Quickly retransmits lost packets without waiting for a timeout

C) Encrypts data packets

D) Decreases window size to avoid congestion

Answer: B) Quickly retransmits lost packets without waiting for a timeout

42. In the Transport Layer, what is the main purpose of segmenting data?

A) To increase data transfer speed

B) To ensure data security

C) To make data transmission more efficient

D) To prioritize data packets

Answer: C) To make data transmission more efficient

43. Which protocol is used for real-time, multimedia data transmission?

A) HTTP

B) TCP

C) UDP

D) FTP

Answer: C) UDP

44. How does TCP ensure that packets are delivered in the correct order?

A) Time stamps

B) Sequence numbers

C) Data length indicators

D) Encryption keys

Answer: B) Sequence numbers

45. What is the primary difference between flow control and congestion control in TCP?

A) Flow control is managed by the sender, while congestion control is managed by the receiver

B) Flow control regulates data flow to prevent buffer overflow, while congestion control prevents network congestion

C) Flow control encrypts data, while congestion control does not

D) Flow control is used in UDP, while congestion control is used in TCP

Answer: B) Flow control regulates data flow to prevent buffer overflow, while congestion control prevents network congestion

46. Which of the following is true about UDP?

A) It uses handshaking protocols for communication

B) It provides guaranteed delivery of packets

C) It is suitable for applications that need fast, efficient transmission

D) It retransmits lost packets

Answer: C) It is suitable for applications that need fast, efficient transmission

47. In TCP, what is the role of the 'acknowledgment number'?

A) To acknowledge the successful data encryption

B) To confirm the receipt of a segment

C) To number the segments in a sequence

D) To check the integrity of data

Answer: B) To confirm the receipt of a segment

48. Which feature of TCP helps in avoiding congestion collapse?

A) Error correction

B) Three-way handshake

C) Window scaling

D) Flow control

Answer: C) Window scaling

49. UDP is considered ideal for which type of applications?

A) Applications that require strict data sequencing

B) Applications that require reliable data transmission

C) Applications where speed is more critical than reliability

D) Applications that require extensive error checking

Answer: C) Applications where speed is more critical than reliability

50. In the Transport Layer, which of the following is responsible for breaking down messages into smaller units?

A) Network Layer

B) Data Link Layer

C) Transport Layer

D) Application Layer

Answer: C) Transport Layer

51. What is the primary purpose of the Domain Name System (DNS)?

A) To encrypt internet communications

B) To map domain names to IP addresses

C) To regulate internet traffic

D) To store user data

Answer: B) To map domain names to IP addresses

52. What does SNMP stand for?

A) Simple Network Management Protocol

B) Secure Network Management Protocol

C) System Network Management Protocol

D) Simple Network Mapping Protocol

Answer: A) Simple Network Management Protocol

53. Which protocol is commonly used for sending emails?

A) HTTP

B) FTP

C) SMTP

D) SNMP

Answer: C) SMTP

54. What is the main function of HTTP in the World Wide Web?

A) To transfer files between computers

B) To provide secure communication

C) To facilitate web browsing by transferring web pages

D) To stream live video content

Answer: C) To facilitate web browsing by transferring web pages

55. Streaming audio and video over the internet primarily uses which protocol?

A) TCP

B) UDP

C) HTTP

D) FTP

Answer: B) UDP

56. Which DNS record type is used for mail servers?

A) A

B) MX

C) CNAME

D) NS

Answer: B) MX

57. What is the main purpose of SNMP in network management?

A) To encrypt data packets

B) To monitor and manage network devices

C) To route data across networks

D) To provide faster data transfer

Answer: B) To monitor and manage network devices

58. Which of the following is a characteristic of HTTP/2 compared to HTTP/1.1?

A) Reduced header size

B) No support for SSL/TLS

C) Slower data transmission

D) Single request per connection

Answer: A) Reduced header size

59. In email architecture, what is the role of IMAP?

A) To send emails to a server

B) To retrieve emails from a server

C) To encrypt email messages

D) To filter spam emails

Answer: B) To retrieve emails from a server

60. What does the '404 Not Found' HTTP status code indicate?

A) Server error

B) Forbidden access

C) Page not found

D) Redirect to another page

Answer: C) Page not found

61. Which technology allows for the embedding of multimedia (audio/video) in web pages without the need for additional software?

A) Adobe Flash

B) HTML5

C) Java applets

D) ActiveX controls

Answer: B) HTML5

62. What is the primary function of a Web browser?

A) To connect to FTP servers

B) To render HTML into a human-readable format

C) To send and receive emails

D) To provide DNS services

Answer: B) To render HTML into a human-readable format

63. Which protocol is primarily used for streaming live video content on the internet?

A) RTP

B) SMTP

C) FTP

D) SNMP

Answer: A) RTP

64. In the context of the World Wide Web, what is a 'cookie'?

A) A malicious software

B) A small data file stored on the user's computer by a web browser

C) A hardware component

D) A type of network protocol

Answer: B) A small data file stored on the user's computer by a web browser

65. What is the purpose of the SSL/TLS protocol in web communications?

A) To compress web pages for faster loading

B) To route web traffic efficiently

C) To provide a secure connection between a web browser and server

D) To translate domain names to IP addresses

Answer: C) To provide a secure connection between a web browser and server

66. Which protocol is used for resolving IP addresses to MAC addresses?

A) ARP

B) RARP

C) DNS

D) DHCP

Answer: A) ARP

67. In the context of email, what does MIME stand for?

A) Mail Internet Mail Extensions

B) Multipurpose Internet Mail Extensions

C) Mail Interface Message Encoding

D) Multipurpose Interface Mail Encoding

Answer: B) Multipurpose Internet Mail Extensions

68. What is the primary role of JavaScript in web applications?

A) Server-side data processing

B) Creating interactive web pages

C) Storing data on the server

D) Managing the network layer

Answer: B) Creating interactive web pages

69. Which HTTP method is typically used to submit form data to a web server?

A) GET

B) POST

C) PUT

D) DELETE

Answer: B) POST

70. What is the primary purpose of the File Transfer Protocol (FTP)?

A) Encrypting data transmission

B) Transferring files between systems

C) Routing packets across a network

D) Compressing files for storage

71. Which technology is primarily used to design the layout and style of a web page?

A) HTML

B) CSS

C) JavaScript

D) PHP

Answer: B) CSS

72. What does the term 'podcast' refer to?

A) A live streaming video

B) A series of digital audio or video files available for download

C) A type of network protocol

D) A form of computer virus

Answer: B) A series of digital audio or video files available for download

73. In web technology, what does AJAX stand for?

A) Asynchronous JavaScript and XML

B) Automatic Java and XML

C) Advanced JavaScript and XHTML

D) Asynchronous Java and XHTML

Answer: A) Asynchronous JavaScript and XML

74. What is a primary security concern in electronic mail systems?

A) Slow email delivery

B) Data compression

C) Unauthorized access and spam

D) The use of different email clients

Answer: C) Unauthorized access and spam

75. Which HTML element is used to embed a video file in a web page?

A) <video>

B) <embed>

C) <media>

D) <stream>

Answer: A) <video>

76. Which protocol is primarily used for voice over internet protocol (VoIP) communication?

A) SIP

B) HTTP

C) FTP

D) SNMP

Answer: A) SIP

77. What is the main function of cookies in web browsing?

A) To speed up the internet connection

B) To encrypt user data

C) To store user-specific information on the client side

D) To increase the bandwidth

Answer: C) To store user-specific information on the client side

78. In DNS, what does the term "TTL" stand for?

A) Total Transmission Length

B) Time To Live

C) Transfer Type Label

D) Terminate Transfer Link

Answer: B) Time To Live

79. What technology is commonly used to create dynamic, interactive web applications?

A) XML

B) HTML

C) AJAX

D) CSS

Answer: C) AJAX

80. Which of these is a widely used protocol for managing the security of a message transmission on the Internet?

A) SSH

B) HTTP

C) SMTP

D) SSL/TLS

Answer: D) SSL/TLS

81. What is the primary advantage of using cloud-based email services?

A) Unlimited storage capacity

B) Higher email transmission speed

C) Accessibility from any location

D) Automatic email encryption

Answer: C) Accessibility from any location

82. What does the 301 status code in HTTP indicate?

A) Page not found

B) Internal server error

C) Moved permanently

D) Bad request

Answer: C) Moved permanently

83. In web development, what is the purpose of using RESTful APIs?

A) To encrypt data

B) To create more dynamic and interactive websites

C) To enable communication between different software applications over the web

D) To store data on the client side

Answer: C) To enable communication between different software applications over the web

84. Which protocol is used to synchronize the time on computers over a network?

A) NTP

B) FTP

C) HTTP

D) SNMP

Answer: A) NTP

85. In the context of streaming media, what does 'buffering' refer to?

A) Compressing audio and video files

B) Temporarily storing data to ensure smooth playback

C) Encrypting media files

D) Converting media files to different formats

Answer: B) Temporarily storing data to ensure smooth playback

86. What is the main purpose of WebSockets in web development?

A) To encrypt data transmission

B) To enable real-time, bidirectional communication between web clients and servers

C) To validate user input on forms

D) To increase the loading speed of web pages

Answer: B) To enable real-time, bidirectional communication between web clients and servers

87. In the context of email, what is the primary function of the POP3 protocol?

A) To send emails

B) To retrieve emails from a server

C) To encrypt email messages

D) To synchronize emails across devices

Answer: B) To retrieve emails from a server

88. What does RSS stand for in web technology?

A) Real-time Streaming Service

B) Rich Site Summary

C) Rapid SSL Security

D) Relative Scripting Syntax

Answer: B) Rich Site Summary

89. Which HTTP status code represents a successful HTTP request?

A) 200 OK

B) 404 Not Found

C) 500 Internal Server Error

D) 302 Found

Answer: A) 200 OK

90. What is the primary function of OAuth in web security?

A) Password encryption

B) Two-factor authentication

C) Providing a method for secure authorization

D) Filtering spam emails

Answer: A) 200 OK

91. Which of these is a markup language designed to transport and store data?

A) HTML

B) JSON

C) XML

D) JavaScript

Answer: C) XML

92. What is the primary role of the Content Delivery Network (CDN)?

A) To secure website data

B) To distribute the load of website traffic

C) To manage website databases

D) To provide email services

Answer: B) To distribute the load of website traffic

93. What does the term 'ping' refer to in network communication?

A) A method to encrypt data

B) A tool to measure the speed of an internet connection

C) A technique to determine the reachability of a host on an IP network

D) A protocol for file transfer

Answer: C) A technique to determine the reachability of a host on an IP network

94. What is a major feature of HTML5 compared to previous versions?

A) Faster page load times

B) Built-in support for video and audio content

C) Automatic error correction

D) Enhanced security features

Answer: B) Built-in support for video and audio content

95. What is the main purpose of the Traceroute (tracert) command in networking?

A) To display the routing path and measure transit delays of packets across a network

B) To convert domain names to IP addresses

C) To test the network speed

D) To configure network devices

Answer: A) To display the routing path and measure transit delays of packets across a network

96. In web development, what is the primary use of Cascading Style Sheets (CSS)?

A) To create the structure of web pages

B) To control the layout and appearance of web page elements

C) To write server-side scripts

D) To store data in web applications

Answer: B) To control the layout and appearance of web page elements

97. Which protocol is used for remote login over a network?

A) SNMP

B) FTP

C) Telnet

D) SMTP

Answer: C) Telnet

98. What is the primary advantage of using the POST method over GET in HTTP?

A) It can send request parameters in the URL

B) It allows caching of the response

C) It has no restrictions on data length

D) It is faster than GET

Answer: C) It has no restrictions on data length

99. In the context of the World Wide Web, what is a 'web crawler'?

A) A type of computer virus

B) A tool used for automated browsing of the web

C) A web development framework

D) A network diagnostic tool

Answer: B) A tool used for automated browsing of the web

100. What does the 'S' in HTTPS stand for?

A) Speed

B) Secure

C) Script

D) Service

Answer: B) Secure

101. What is the primary difference between TCP and UDP in terms of data transmission?

A) TCP transmits data faster than UDP

B) UDP guarantees data delivery, while TCP does not

C) TCP provides reliable data transmission, while UDP does not

D) UDP uses connection-oriented communication, while TCP uses connectionless

Answer: C) TCP provides reliable data transmission, while UDP does not

102. Which of the following is a feature unique to TCP?

A) Stateless communication

B) Real-time data transmission

C) Ordered data delivery

D) Low overhead

Answer: C) Ordered data delivery

103. How does the Transport Layer handle data from different applications?

A) By assigning different IP addresses

B) Through port numbers

C) By varying the data packet size

D) By altering the transmission speed

Answer: B) Through port numbers

104. What is the main role of the congestion window in TCP?

A) To secure data packets

B) To regulate the number of bytes that can be sent before receiving an acknowledgment

C) To encrypt the data being sent

D) To prioritize data packets

Answer: B) To regulate the number of bytes that can be sent before receiving an acknowledgment

105. Which protocol is used by DNS to resolve domain names, given its need for speed and efficiency?

A) TCP

B) UDP

C) HTTP

D) SMTP

Answer: B) UDP

106. What is the purpose of the SYN flag in the TCP three-way handshake process?

A) To acknowledge receipt of data

B) To synchronize sequence numbers

C) To terminate a connection

D) To indicate data transmission has started

Answer: B) To synchronize sequence numbers

107. In TCP, what happens when the sender receives three duplicate ACKs?

A) The connection is terminated

B) The congestion window size is increased

C) It triggers a fast retransmit

D) The packet is dropped from the buffer

Answer: C) It triggers a fast retransmit

108. What is the primary benefit of using multiplexing in the Transport Layer?

A) It increases the speed of the internet connection

B) It allows multiple applications to share the same network connection

C) It encrypts data for secure transmission

D) It compresses data to reduce size

Answer: B) It allows multiple applications to share the same network connection

109. What does the term "flow control" refer to in the context of TCP?

A) Directing data packets along the best route

B) Managing the rate of data transmission between two nodes

C) Encrypting data to protect it during transmission

D) Prioritizing certain types of data over others

Answer: B) Managing the rate of data transmission between two nodes

110. In the context of UDP, what does the term "best effort" service imply?

A) The data will be delivered with the highest priority

B) The data will be delivered if possible, but delivery is not guaranteed

C) The data will be retransmitted indefinitely until it is successfully received

D) The data will be delivered in the exact order it was sent

Answer: B) The data will be delivered if possible, but delivery is not guaranteed

111. In TCP, what is the main function of the "window size"?

A) To determine the size of the data packets

B) To control the flow of data to prevent buffer overflow

C) To encrypt the data being transmitted

D) To set the maximum number of hops a packet can take

Answer: B) To control the flow of data to prevent buffer overflow

112. What does UDP stand for?

A) Unified Data Protocol

B) User Datagram Protocol

C) Universal Data Protocol

D) User Data Packet

Answer: B) User Datagram Protocol

113. In the context of TCP, what is "Selective Acknowledgement" (SACK) used for?

A) To confirm the reception of all packets

B) To acknowledge receipt of non-contiguous blocks of data

C) To synchronize sequence numbers

D) To initiate a three-way handshake

Answer: B) To acknowledge receipt of non-contiguous blocks of data

114. What type of communication does TCP use?

A) Broadcast

B) Unicast

C) Multicast

D) Anycast

Answer: B) Unicast

115. How does UDP differ from TCP in terms of connection establishment?

A) UDP establishes a connection before data transmission, while TCP does not

B) UDP uses a four-way handshake, while TCP uses a three-way handshake

C) UDP does not establish a connection before sending data, while TCP does

D) There is no difference in connection establishment between TCP and UDP

Answer: C) UDP does not establish a connection before sending data, while TCP does

116. Which field in the TCP header indicates the start of the data segment?

A) Sequence Number

B) Acknowledgment Number

C) Data Offset

D) Window Size

Answer: C) Data Offset

117. In TCP, what mechanism is used to handle congestion in the network?

A) Flow control

B) Error correction

C) Congestion control

D) Buffer management

Answer: C) Congestion control

118. UDP is considered less reliable than TCP because it lacks which feature?

A) Error detection

B) Flow control

C) Acknowledgment of received packets

D) Both B and C

Answer: D) Both B and C

119. What does the term "three-way handshake" in TCP establish?

A) The speed of the connection

B) The validity of the IP address

C) A reliable connection session

D) The data transmission rate

Answer: C) A reliable connection session

120. Which type of transmission does UDP support?

A) Connection-oriented transmission

B) Connectionless transmission

C) Sequential data transmission

D) Encrypted data transmission

Answer: B) Connectionless transmission

121. In TCP, what is the purpose of the "FIN" flag?

A) To finalize a data packet

B) To indicate the end of data transmission and initiate connection termination

C) To confirm data receipt

D) To synchronize sequence numbers

Answer: B) To indicate the end of data transmission and initiate connection termination

122. What feature makes TCP a reliable data transmission protocol?

A) Connectionless communication

B) Best-effort delivery

C) Sequence numbering and acknowledgment

D) Stateless operation

Answer: C) Sequence numbering and acknowledgment

123. How does TCP achieve flow control?

A) By using the window size field in the TCP header

B) Through fixed packet sizes

C) By encrypting data packets

D) Using round-trip time measurements

Answer: A) By using the window size field in the TCP header

124. In the TCP header, what does the "URG" flag indicate?

A) The packet is encrypted

B) The sender is experiencing congestion

C) Urgent data is contained in the packet

D) The packet is a part of a multicast group

Answer: C) Urgent data is contained in the packet

125. How does UDP differ from TCP in terms of header size?

A) UDP headers are larger than TCP headers

B) UDP headers are the same size as TCP headers

C) UDP headers are smaller than TCP headers

D) The header size varies depending on the data

Answer: C) UDP headers are smaller than TCP headers