

1. One of the responsibilities of the transport layer protocol is to create a _____ communication.

- A. host-to-host
- B. process-to-process
- C. node-to-node
- D. none of these

ANSWER: B

2. UDP is called a _____ transport protocol.

- A. connectionless, reliable
- B. connection-oriented, unreliable
- C. connectionless, unreliable
- D. none of these

ANSWER: C

3. UDP does not add anything to the services of IP except for providing _____ communication.

- A. node-to-node
- B. process-to-process
- C. host-to-host
- D. none of these

ANSWER: B

4. UDP is an acronym for _____.

- A. User Delivery Protocol
- B. User Datagram Procedure
- C. User Datagram Protocol
- D. none of these

ANSWER: C

5. In the sending computer, UDP receives a data unit from the _____ layer.

- A. application
- B. transport

- C. IP
- D. none of these

ANSWER: A

6. In the sending computer, UDP sends a data unit to the _____ layer.

- A. application
- B. transport
- C. IP
- D. none of these

ANSWER: C

7. UDP and TCP are both _____ layer protocols.

- A. data link
- B. network
- C. transport
- D. none of these

ANSWER: C

8. Which of the following functions does UDP perform?

- A. process-to-process communication
- B. host-to-host communication
- C. end-to-end reliable data delivery
- D. none of these

ANSWER: A

9. A port address in UDP is _____ bits long.

- A. 8
- B. 16
- C. 32
- D. none of these

ANSWER: B

10.UDP packets have a fixed-size header of _____ bytes.

- A. 16
- B. 8
- C. 40
- D. none of these

ANSWER: B

11.TCP groups a number of bytes together into a packet called a _____.

- A. user datagram
- B. segment
- C. datagram
- D. none of these

ANSWER: B

12.TCP is a _____ protocol.

- A. connection-oriented
- B. connectionless
- C. both connection-oriented and connectionless
- D. none of these

ANSWER: A

13.TCP is a(n) _____ transport protocol.

- A. unreliable
- B. best-effort delivery
- C. reliable
- D. none of these

ANSWER: C

14.The bytes of data being transferred in each connection are numbered by TCP. The numbering starts with a _____.

- A. 0
- B. 1
- C. randomly generated number
- D. none of these

ANSWER: C

15. TCP assigns a sequence number to each segment that is being sent. The sequence number for each segment is the number of the _____ byte carried in that segment.

- A. first
- B. last
- C. middle
- D. none of these

ANSWER: A

16. Communication in TCP is _____.

- A. simplex
- B. half-duplex
- C. full-duplex
- D. none of these

ANSWER: C

17. The acknowledgment number is _____.

- A. independent
- B. randomly generated
- C. cumulative
- D. none of these

ANSWER: C

18. The value of the window size is determined by _____.

- A. the sender
- B. the receiver

- C. both the sender and receiver
- D. none of these

ANSWER: B

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

- A. optional
- B. mandatory
- C. at the discretion of the application program
- D. none of these

ANSWER: B

20. A TCP segment is encapsulated in _____.

- A. an IP datagram
- B. an Ethernet frame
- C. a UDP user datagram
- D. none of these

ANSWER: A

21. Connection establishment in TCP is called _____ handshaking.

- A. two-way
- B. four-way
- C. one-way
- D. none of these

ANSWER: D

22. A SYN segment cannot carry data; it consumes _____ sequence number(s).

- A. no
- B. one
- C. two
- D. none of these

ANSWER: B

23. A SYN + ACK segment cannot carry data; it consumes _____ sequence number(s).

- A. no
- B. three
- C. two
- D. none of these

ANSWER: D

24. An ACK segment, if carrying no data, consumes _____ sequence number(s).

- A. no
- B. three
- C. two
- D. none of these

ANSWER: A

25. The connection establishment procedure in TCP is susceptible to a serious security problem called the _____ attack.

- A. ACK flooding
- B. FIN flooding
- C. SYN flooding
- D. none of these

ANSWER: C

26. The SYN flooding attack belongs to a group of security attacks known as a _____ attack.

- A. denial of service
- B. replay
- C. man-in-the middle
- D. none of these

ANSWER: A

27. The FIN segment consumes _____ sequence numbers if it does not carry data.

- A. two
- B. three
- C. no
- D. none of these

ANSWER: D

28. The FIN + ACK segment consumes _____ sequence number(s) if it does not carry data.

- A. two
- B. three
- C. one
- D. none of these

ANSWER: C

29. _____ control regulates the amount of data a source can send before receiving an acknowledgment from the destination.

- A. Error
- B. Flow
- C. Congestion
- D. none of these

ANSWER: B

30. To accomplish flow control, TCP uses a _____ window protocol.

- A. limited-size
- B. sliding
- C. fixed-size
- D. none of these

ANSWER: B

31. IP is responsible for _____ communication while TCP is responsible for _____ communication.

- A. host-to-host; process-to-process
- B. process-to-process; host-to-host

C. process-to-process; network-to-network

D. none of these

ANSWER: A

32. If a segment carries data along with an acknowledgment, this is called _____.

A. backpacking

B. piggybacking

C. piggypacking

D. none of these

ANSWER: B

33. Multiply the header length field by _____ to find the total number of bytes in the TCP header.

A. 2

B. 4

C. 6

D. none of these

ANSWER: B

34. Urgent data requires the urgent pointer field as well as the URG bit in the _____ field.

A. control

B. offset

C. sequence number

D. none of these

ANSWER: A

35. The options field of the TCP header ranges from 0 to _____ bytes.

A. 10

B. 20

C. 40

D. none of these

ANSWER: C

36.If the ACK value is 200, then byte _____ has been received successfully.

- A. 199
- B. 200
- C. 201
- D. none of these

37.In _____ we try to avoid traffic congestion.

- A. congestion control
- B. Quality of service
- C. either (congestion control) or (Quality of service)
- D. both (congestion control) and (Quality of service)

ANSWER: A

38.In _____, we try to create an appropriate environment for the traffic.

- A. congestion control
- B. Quality of service
- C. either (congestion control) or (Quality of service)
- D. both (congestion control) and (Quality of service)

ANSWER: B

39.Congestion in a network or internetwork occurs because routers and switches have _____.

- A. tables
- B. queues
- C. crosspoints
- D. none of these

ANSWER: B

40.In a network, when the load is much less than the capacity of the network, the delay is _____.

- A. at a maximum

- B. at a minimum
- C. constant
- D. none of these

ANSWER: B

41. In a network, when the load reaches the network capacity, the delay _____.

- A. increases sharply
- B. decreases sharply
- C. remains constant
- D. cannot be predicted

ANSWER: A

42. In a network, when the load is below the capacity of the network, the throughput _____.

- A. increases sharply
- B. increases proportionally with the load
- C. declines sharply
- D. declines proportionally with the load

ANSWER: B

43. In a network, after the load reaches the capacity, throughput _____.

- A. increases sharply
- B. increases proportionally with the load
- C. declines sharply
- D. declines proportionally with the load

ANSWER: C

44. In _____ congestion control, policies are applied to prevent congestion before it happens.

- A. open-loop
- B. closed-loop
- C. either (open-loop) or (closed-loop)

D. neither (open-loop) nor (closed-loop)

ANSWER: A

45. In _____ congestion control, mechanisms are used to alleviate congestion after it happens.

A. open-loop

B. closed-loop

C. either (open-loop) or (closed-loop)

D. neither (open-loop) nor (closed-loop)

ANSWER: B

46. The technique of _____ refers to a congestion control mechanism in which a congested node stops receiving data from the immediate upstream node or nodes.

A. backpressure

B. choke packet

C. implicit signaling

D. explicit signaling

ANSWER: A

47. A _____ is a packet sent by a node to the source to inform it of congestion.

A. backpressure

B. choke packet

C. implicit signaling

D. explicit signaling

ANSWER: B

48. In _____, there is no communication between the congested node or nodes and the source. The source guesses that there is a congestion somewhere in the network from other symptoms.

A. backpressure

B. choke packet

C. implicit signaling

D. explicit signaling

ANSWER: C

49. In the _____ method, the signal is included in the packets that carry data.

- A. backpressure
- B. choke packet
- C. implicit signaling
- D. explicit signaling

ANSWER: D

50. _____ is a characteristic that a flow needs. Lack of it means losing a packet or acknowledgment, which entails retransmission.

- A. Reliability
- B. Delay
- C. Jitter
- D. Bandwidth

ANSWER: A

51. _____ is a flow characteristic that applications can tolerate in different degrees.

- A. Reliability
- B. Delay
- C. Jitter
- D. Bandwidth

ANSWER: B

52. _____ is the variation in delay for packets belonging to the same flow.

- A. Reliability
- B. Delay
- C. Jitter
- D. Bandwidth

ANSWER: C

53. In _____, queuing packets wait in a buffer (queue) until the node (router or switch) is ready to process them.

- A. FIFO
- B. priority
- C. weighted fair
- D. none of these

ANSWER: A

54. In _____ queuing, packets are first assigned to a priority class. Each class has its own queue.

- A. FIFO
- B. priority
- C. weighted fair
- D. none of these

ANSWER: B

55. In _____ queuing, the packets are assigned to different classes and admitted to different queues. The queues, however, are weighted based on the priority of the queues; higher priority means a higher weight. The system processes packets in each queue in a round-robin fashion with the number of packets selected from each queue based on the corresponding weight.

- A. FIFO
- B. priority
- C. weighted fair
- D. none of these

ANSWER: C

56. In the _____ bucket algorithm, bursty chunks are stored in the bucket and sent out at an average rate.

- A. leaky
- B. token
- C. either (leaky) or (token)
- D. neither (leaky) nor (token)

ANSWER: A

57.The _____ bucket algorithm allows idle hosts to accumulate credit for the future in the form of tokens.

- A. leaky
- B. token
- C. either (leaky) or (token)
- D. neither (leaky) nor (token)

ANSWER: B

58.To have a hierarchical name space, a _____ was designed.

- A. domain space
- B. domain name
- C. domain name space
- D. none of these

ANSWER: C

59.In the DNS, the names are defined in _____ structure.

- A. a linear list
- B. an inverted-tree
- C. a graph
- D. none of these

ANSWER: B

60.The root of the DNS tree is _____.

- A. a string of characters
- B. a string of 63 characters
- C. an empty string
- D. none of these

ANSWER: C

61.A full domain name is a sequence of labels separated by _____.

- A. semicolons

- B. dots
- C. colons
- D. none of these

ANSWER: B

62.If a label is terminated by a null string, it is called a _____.

- A. PQDN
- B. FQDN
- C. SQDN
- D. none of these

ANSWER: B

63.If a label is not terminated by a null string, it is called a _____.

- A. PQDN
- B. FQDN
- C. SQDN
- D. none of these

ANSWER: A

64.In the Internet, the domain name space (tree) is divided into _____ different sections:

- A. three
- B. two
- C. four
- D. none of these

ANSWER: A

65.The _____ domains define registered hosts according to their generic behavior.

- A. generic
- B. country
- C. inverse
- D. none of these

ANSWER: A

66. The first level in the generic domains section allows _____ possible labels.

- A. 10
- B. 12
- C. 16
- D. none of these

ANSWER: D

67. The _____ domain section uses two-character country abbreviations.

- A. generic
- B. country
- C. inverse
- D. none of these

ANSWER: B

68. The _____ domain is used to map an address to a name.

- A. generic
- B. country
- C. inverse
- D. none of these

ANSWER: C

69. In the domain name chal.atc.fhda.edu, _____ is the least specific label.

- A. chal
- B. atc
- C. edu
- D. none of these

ANSWER: C

70. In the domain name chal.atc.fhda.edu, _____ is the most specific label.

- A. chal
- B. atc
- C. edu
- D. none of these

ANSWER: A

71. A host with the domain name pit.arc.nasa.gov. is on the _____ level of the DNS hierarchical tree. (The root is level one.)

- A. third
- B. fourth
- C. fifth
- D. none of these

ANSWER: C

72. FTP uses the services of _____.

- A. UDP
- B. IP
- C. TCP
- D. none of these

ANSWER: C

73. In FTP, the well-known port ____ is used for the control connection and the well-known port _____ for the data connection.

- A. 21; 22
- B. 21; 20
- C. 20; 21
- D. none of these

ANSWER: B

74. In FTP, _____ is the service type used by the IP protocol because this is an interactive connection between a user (human) and a server.

- A. maximize throughput

- B. minimize delay
- C. minimize error
- D. none of these

ANSWER: B

75. For the control connection, FTP uses the _____ character set

- A. regular ASCII
- B. EBCDIC
- C. NVT ASCII
- D. none of these

ANSWER: C

76. During an FTP session the control connection is opened _____.

- A. exactly once
- B. exactly twice
- C. as many times as necessary
- D. none of these

ANSWER: A

77. During an FTP session the data connection is opened _____.

- A. exactly once
- B. exactly twice
- C. as many times as necessary
- D. none of these

ANSWER: C

78. In FTP, a file can be organized into records, pages, or a stream of bytes. These are types of an attribute called _____.

- A. file types
- B. data structures
- C. transmission modes

D. none of these

ANSWER: B

79. In FTP, there are three types of _____: stream, block, and compressed.

A. file types

B. data structures

C. transmission modes

D. none of these

ANSWER: C

80. In FTP, ASCII, EBCDIC, and image define an attribute called _____.

A. file types

B. data structures

C. transmission modes

D. none of these

ANSWER: A

81. In FTP, when we _____, it is copied from the server to the client.

A. retrieve a file

B. retrieve a list

C. retrieve a file and retrieve a list

D. none of these

ANSWER: C

82. In FTP, when we _____, it is copied from the client to the server.

A. retrieve a file

B. store a file

C. retrieve a list

D. none of these

ANSWER: B

83. When the sender and the receiver of an email are on the same system, we need only _____.

- A. one UA
- B. two UAs
- C. one UA and one MTA
- D. none of these

ANSWER: B

84. When the sender and the receiver of an email are on different systems, we need only _____.

- A. one MTA
- B. two UAs
- C. two UAs and one pair of MTAs
- D. none of these

ANSWER: C

85. When the sender is connected to the mail server via a LAN or a WAN, we need _____.

- A. two MTA
- B. two UAs and two pairs of MTAs
- C. two UAs and a pair of MTAs
- D. none of these

ANSWER: B

86. When both sender and receiver are connected to a mail server via a LAN or a WAN, we need _____.

- A. two UAs, two pairs of MTAs, and a pair of MAAs
- B. two UAs, and two pairs of MTAs
- C. two UAs, two pairs of MTAs, and two pairs of MAAs
- D. none of these

ANSWER: A

87. _____ provides service to the user to make the process of sending and receiving a message easier.

- A. An MTA
- B. An MAA
- C. A UA
- D. none of these

ANSWER: C

88. Which of the following services is not provided by a UA?

- A. composing messages
- B. reading messages
- C. replying messages
- D. all are

ANSWER: D

89. There are two types of user agents: _____ and _____.

- A. command-driven; data-driven
- B. command-driven; GUI-based
- C. command-based and data-based
- D. none of these

ANSWER: B

90. The message contains the _____ and the _____.

- A. header; envelop
- B. header; body
- C. envelop; body
- D. none of these

ANSWER: B

91. In the Internet, the email address consists of two parts: a _____ and a _____.

- A. local part; domain name

- B. global part; domain name
- C. label; domain name
- D. none of these

ANSWER: A

92. _____ is a supplementary protocol that allows non-ASCII data to be sent through email.

- A. JPEG
- B. MPEG
- C. MIME
- D. none of these

ANSWER: C

93. The actual mail transfer is done through _____.

- A. UAs
- B. MTAs
- C. MAAs
- D. none of these

ANSWER: B

94. The formal protocol that defines the MTA client and server in the Internet is called _____.

- A. SMTP
- B. SNMP
- C. TELNET
- D. none of these

ANSWER: A

95. SMTP is a _____ protocol.

- A. pull
- B. push
- C. both pull and push
- D. none of these

ANSWER: B

96. Currently two message access protocols are available: _____ and _____.

- A. POP3; IMAP2
- B. POP4; IMAP1
- C. POP3; IMAP4
- D. none of these

ANSWER: C

97. _____ is more powerful and complex than _____.

- A. POP3; IMAP4
- B. IMAP4; POP3
- C. SMTP; POP3
- D. none of these

ANSWER: B

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

- A. URL
- B. ULR
- C. RLU
- D. none of these

ANSWER: A

99. In a URL, the _____ is the client-server program used to retrieve the document.

- A. path
- B. protocol
- C. host
- D. none of these

ANSWER: B

100. In a URL, the _____ is the computer on which the information is located.

- A. path
- B. protocol
- C. host
- D. none of these

ANSWER: C

101. In a URL, an optional _____ can be inserted between the host and the path, and it is separated from the host by a colon.

- A. path
- B. protocol
- C. host
- D. none of these

ANSWER: D

102. In a URL, the _____ is the full name of the file where the information is located.

- A. path
- B. protocol
- C. host
- D. none of these

ANSWER: A

103. A cookie is made by the _____ and eaten by the _____.

- A. client; client
- B. client; server
- C. server; server
- D. none of these

ANSWER: C

104. The documents in the WWW can be grouped into _____ broad categories.

- A. two
- B. three

- C. four
- D. none of these

ANSWER: B

105. A _____ document is a fixed-content document that is created and stored in a server. The client can get a copy of the document only.

- A. static
- B. dynamic
- C. active
- D. none of these

ANSWER: A

106. _____ is a language for creating Web pages.

- A. HTTP
- B. HTML
- C. FTTP
- D. none of these

ANSWER: B

107. A _____ document is created by a Web server whenever a browser requests the document.

- A. static
- B. dynamic
- C. active
- D. none of these

ANSWER: B

108. _____ is a technology that creates and handles dynamic documents.

- A. GIC
- B. CGI
- C. GCI
- D. none of these

ANSWER: B

109. Dynamic documents are sometimes referred to as _____ dynamic documents.

- A. client-site
- B. server-site
- C. both client-site and server-site
- D. none of these

ANSWER: B

110. For many applications, we need a program or a script to be run at the client site. These are called _____ documents.

- A. static
- B. dynamic
- C. active
- D. none of these

ANSWER: C

111. One way to create an active document is to use _____.

- A. CGI
- B. Java stand-alone programs
- C. Java applets
- D. none of these

ANSWER: C

112. Active documents are sometimes referred to as _____ dynamic documents.

- A. client-site
- B. server-site
- C. both client-site and server-site
- D. none of these

ANSWER: A

113. HTTP uses the services of _____ on well-known port 80.

- A. UDP
- B. IP
- C. TCP
- D. none of these

ANSWER: C

114. In HTTP, the first line in a request message is called a _____ line; the first line in the response message is called the _____ line.

- A. request; response
- B. response; request
- C. response; status
- D. none of these

ANSWER: D

115. An HTTP request message always contains _____.

- A. a header and a body
- B. a request line and a header
- C. a status line, a header, and a body
- D. none of these

ANSWER: B

116. An applet is _____ document application program.

- A. a static
- B. an active
- C. a passive
- D. a dynamic

ANSWER: B

117. _____ is the science and art of transforming messages to make them secure and immune to attacks.

- A. Cryptography

B. Cryptoanalysis

C. either (Cryptography) or (Cryptoanalysis)

D. neither (Cryptography) nor (Cryptoanalysis)

ANSWER: A

118. The _____ is a number or a set of numbers on which the cipher operates.

A. cipher

B. secret

C. key

D. none of these

ANSWER: C

119. In a(n) _____, the key is called the secret key.

A. symmetric-key

B. asymmetric-key

C. either (symmetric-key) or (asymmetric-key)

D. neither (symmetric-key) nor (asymmetric-key)

ANSWER: A

120. In a(n) _____ cipher, a pair of keys is used.

A. symmetric-key

B. asymmetric-key

C. either (symmetric-key) or (asymmetric-key)

D. neither (symmetric-key) nor (asymmetric-key)

ANSWER: B

121. In an asymmetric-key cipher, the sender uses the _____ key.

A. private

B. public

C. either (private) or (public)

D. neither (private) nor (public)

ANSWER: C

122. DES is a(n) _____ method adopted by the U.S. government.

- A. symmetric-key
- B. asymmetric-key
- C. either (symmetric-key) or (asymmetric-key)
- D. neither (symmetric-key) nor (asymmetric-key)

ANSWER: A

123. One commonly used public-key cryptography method is the _____ algorithm.

- A. RSS
- B. RAS
- C. RSA
- D. RAA

ANSWER: C

124. Message _____ means that the sender and the receiver expect privacy.

- A. confidentiality
- B. integrity
- C. Authentication
- D. none of these

ANSWER: A

125. Message _____ means that the data must arrive at the receiver exactly as sent.

- A. confidentiality
- B. integrity
- C. Authentication
- D. none of these

ANSWER: B

126. Message _____ means that the receiver is ensured that the message is coming from the intended sender, not an imposter.

- A. confidentiality
- B. integrity
- C. Authentication
- D. none of these

ANSWER: C

127. _____ means that a sender must not be able to deny sending a message that he sent.

- A. confidentiality
- B. integrity
- C. Authentication
- D. none of these

ANSWER: D

128. A(n) _____ can be used to preserve the integrity of a document or a message.

- A. message digest
- B. message summary
- C. encrypted message
- D. none of these

ANSWER: A

129. A(n) _____ function creates a message digest out of a message.

- A. encryption
- B. decryption
- C. hash
- D. none of these

ANSWER: C

130. To authenticate the data origin, one needs a(n) _____.

- A. MDC

B. MAC

C. either (MDC) or (MAC)

D. neither (MDC) nor (MAC)

ANSWER: B

131. A _____ signature is included in the document; a _____ signature is a separate entity.

A. conventional; digital

B. digital; digital

C. either (conventional; digital) or (digital; digital)

D. neither (conventional; digital) nor (digital; digital)

ANSWER: A

132. Digital signature provides _____.

A. authentication

B. nonrepudiation

C. both (authentication) and (nonrepudiation)

D. neither (authentication) nor (nonrepudiation)

ANSWER: C

133. A digital signature needs a(n) _____ system.

A. symmetric-key

B. asymmetric-key

C. either (symmetric-key) or (asymmetric-key)

D. neither (symmetric-key) nor (asymmetric-key)

ANSWER: B

134. _____ is more powerful than _____.

A. proxy server, packet filter

B. packet filter, proxy server

C. proxy server, application gateway

D. application gateway, proxy server

ANSWER: A