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Which is NOT a PDU(Protocol Data Unit) ?
A) Frame
B) Packet
C) Segment
D) Datagram
E) HTTP *

Apache is a(n):
A) email server program
B) DNS server program
C) DHCP server program
D) HTTP (or web) server program *
E) Operating system

The Chrome web browser should run on the _____ layer.
A) application*
B) transport
C) internet
D) data link
E) physical

According to the encapsulation and de-encapsulation process between standard layers, the data field of a frame most likely includes a(n) :
A) IP packet *
B) sending station's MAC address
C) receiving station's MAC address
D) TCP segment
E) application PDU (protocol data unit)

According to the encapsulation and de-encapsulation process between standard layers, the data field of a packet may include a(n) :
A) UDP datagram
B) TCP segment
C) application PDU (protocol data unit)
D) Ethernet frame
E) UDP datagram or TCP segment*

Establishing a logical connection(or handshaking) between two computers requires the exchange of _____ messages.
A) 0
B) 1
C) 2
D) 3*
E) 5

The real-life analogy of an IP packet is:

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A) the Jayne's letter to Brian
B) the airplane that delivers the Jayne's letter
C) the envelop that contains the Jayne's letter *
D) Jayne and Brian's mailing addresses
E) Jayne and Brian's houses

Standard details of network cables should be defined in the _____ layer
A) application
B) transport
C) internet
D) data link
E) physical*

Which of the following is NOT a layer in the hybrid TCP/IP-OSI architecture?
A) physical
B) session*
C) internet
D) data link
E) transport

Which correctly pairs a standard layer and its PDU name?
A) application - segment
B) transport - frame
C) internet - packet *
D) data link - segment
E) physical - datagram

Which of these is an internet layer function?
A) Provision of message integrity
B) Flow control
C) Error control
D) Session management
E) Packet creation *

Below message is generated at the _____ layer:
"GET / /HTTP 1.1
Host: www.whitehouse.gov"
A) application*
B) transport
C) internet
D) data link
E) physical

SYN and ACK are exchanged for _____ between two hosts:
A) session establishment *
B) data exchange

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C) pinging
D) detection of transmission errors
E) detection of lost messages

As for TCP and UDP, which statement is CORRECT?
A) Both are connection-oriented protocol.
B) Both are defined at the transport layer of TCP/IP.*
C) Both are reliable protocol.
D) TCP is better than UDP in handling real-time traffic.
E) Both undertake the detection and correction of transmission errors.

The TTL (time to live) value included in an IP packet indicates:
A) a maximum number of circuits a packet can go through.
B) a maximum number of routers a packet can go through. *
C) a maximum number of switches a packet can go through within a network.
D) the amount of time (ex. 3 minutes) left before the expiration of a packet.
E) the amount of time initially given to a packet for its delivery.

Temporary IP addresses are dynamically allocated by the _____ to requesting hosts.
A) SNMP server
B) DNS server
C) SMTP server
D) DHCP server *
E) Remote access server

When a workstation tries to communicate with a server (ex. www.cnn.com), which of these is a possible port number of the sender ?
A) 80
B) 21
C) 58
D) 110
E) 65000 *

_____ is an application layer protocol that enables mapping between host names and their IP addresses.
A) SMTP
B) DNS *
C) IRC
D) SSH
E) SNMP

The port number, 134, must be most likely:
A) a well-known port number assigned to a server application.*
B) an ephemeral port number assigned to a server application.
C) a dynamic port number assigned to a client application.
D) a dynamic port number assigned to a server application.

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E) a well-known port number assigned to a client application.

A protocol should govern communications between:
A) programs in the same layer of a computer.
B) programs in the same layer of two different computers. *
C) programs in two different layers of a computer.
D) programs in two different layers of two different computers.
E) B and C are both correct.

Choose a CORRECT statement on port numbers.
A) Generally, server hosts use ephemeral port numbers to identify applications.
B) Port numbers are assigned to both TCP and UDP applications.*
C) Well-known port numbers range 0 through 65535.
D) Computer operating systems use an identical range of ephemeral port numbers.
E) The source port of a TCP segment is generally 80 when a browser initiates correspondence with a web server.

Which statement is true?
A) The official address of the Internet is the host name.
B) IP packets contain a header, a data, and a trailer fields.
C) OSI standards are more popular than TCP/IP standards in the application layer.
D) International Standard Organization (ISO) is responsible for developing TCP/IP standards.
E) TCP/IP standards dominate the internet layer. *

Which PDU (protocol data unit) contains information necessary for handshaking (or session establishment) between two hosts?
A) transport layer's segment*
B) transport layer's datagram
C) internet layer's packet
D) data link layer's frame
E) application PDU

In TCP, which party should decide whether to retransmit a lost or damaged segment?
A) the original sender station *
B) the receiver station
C) either the sender or the receiver station depending on the situation.
D) the first router that connects the sender station to the Internet
E) the first router that connects the receiver station to the Internet

Choose an INCORRECT statement on the transport layer process.
A) The port information should be found in the transport layer's TCP segment.
B) The port information should be found in the transport layer's UDP datagram.
C) Opening a TCP connection needs the handshaking process to establish a session.
D) The normal termination of a TCP connection takes exchange of several packets.
E) Transporting multiple files necessary to construct a web page takes one TCP session. *

Choose a CORRECT statement on the flag field bit of the TCP segment.

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A) The ACK bit is used to initiate a session.
B) The SYN bit is used to acknowledge packet arrival.
C) The END bit is used to terminate a session.
D) The INI bit is used to initiate a session.
E) The FIN bit is used to terminate a session. *

MAC addresses are used at the _____ layer for addressing.
A) Application
B) Data Link*
C) Internet
D) Physical
E) Transport

ICMP messages are encapsulated in the data field of _____ for transmission.
A) IP *
B) TCP
C) UDP
D) DNS
E) HTTP

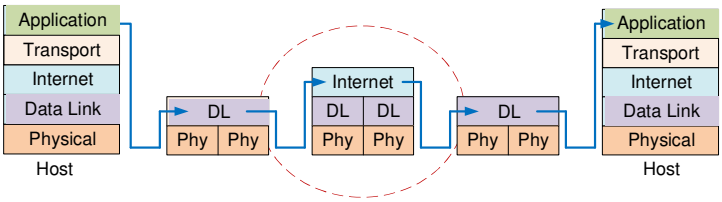
I am trying to reach a web server, www.chicago.edu. The response message from the DNS server tells my computer the _____.
A) domain name of the www.chicago.edu server
B) IP address of the www.chicago.edu server *
C) Default gateway address of the www.chicago.edu server
D) ISP of www.chicago.edu
E) MAC address of the www.chicago.edu server

When does TCP of a host station decide to retransmit a segment?
A) When it does not receive an acknowledgment from the receiver.*
B) Never. TCP is not capable of retransmitting segments.
C) When the neighboring switch requests a retransmission due to a lost segment.
D) When the neighboring router requests a retransmission due to a lost segment.
E) When a TCP connection is not properly closed.

Choose a WRONG statement on the network architecture.
A) It defines basic networking functions and their relationships.
B) It is typically manifested in a layer structure.
C) It is also called as a reference model.
D) A company has to choose either TCP/IP or OSI for its implementation.*
E) Many communication standards are defined in it in the form of protocols.

The following figure demonstrates layer processing necessary to exchange data between two host computers. The device within the ellipse must be a _____.

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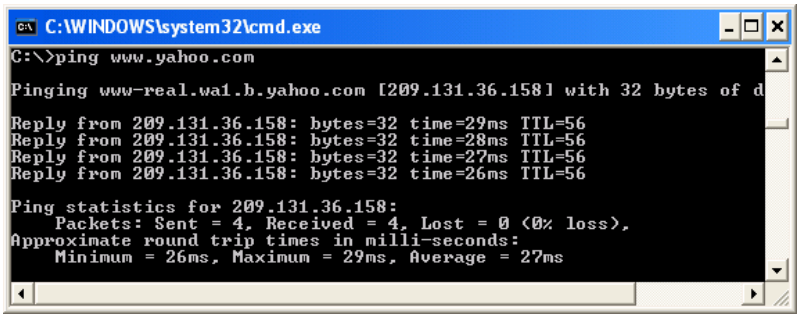
A) Bridge
B) Switch
C) Router *
D) Hub
E) Access point

When a workstation tries to communicate with a server (ex. www.cnn.com), which of these is a possible port number of the sender ?
A) 80
B) 21
C) 58
D) 110
E) 65000 *

UDP (User Datagram Protocol)
A) belongs to the data link layer.
B) is frequently used by real-time applications.*
C) provides a connection-oriented service.
D) belongs to the network layer.
E) Issues an acknowledgment when a packet is received.

Which statement is CORRECT on the connection-orientation/reliability of communications?
A) Connectionless services have explicit openings and closings.
B) Almost all protocols currently in use are connection-oriented and reliable in nature.
C) Reliable protocols resend lost or damaged messages. *
D) TCP is the only unreliable protocol.
E) TCP is a connection-less protocol that does not need handshaking.

Refer to the figure in which the "www.yahoo.com" server is pinged. What is the protocol used to produce the message for communication between two hosts? _____.



A) DHCP

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B) DNS
C) ICMP*
D) HTTP
E) ARP

Which is NOT correctly paired in terms of the software or hardware of a host computer that implements each layer function? Choose the least relevant.

Layers	Implementation
A) Application	Application
B) Transport	Operating System
C) Internet/network	Operating System
D) Data link	Operating System*
E) Physical	Network Interface Card

CHAPTER 2 ARCHITECTURES AND STANDARDS

Exercise 2-1

1. Header includes HTTP version, host name, client OS, and browser name
2. Answer varies

Exercise 2-2

1) Sample answer: www.sdsu.edu -> 130.191.8.198
   http:// 130.191.8.198:80 is the same as http:// 130.191.8.198

2) Sample answer: http:// 130.191.8.198:70 results in search error as the server should use 80 as the default port to be accessed by public.

Exercise 2-3

1.
   a) 6 sessions
   b) 6 sockets
   c) 25573 ~ 25578
   d) 1 socket
   e) 80
   f) www.sdsu.edu

Exercise 2-4

75.15.86.45, 75.15.87.254, 63.200.206.195: AT&T
151.164.94.4, 151.164.52.215, 151.164.248.58: RIPE Network Coordination Centre (RIPE)
216.115.107.83, 209.131.32.17, 209.131.36.158: Yahoo!

Exercise 2-5

1. 4 (to laptop, to PC4, to Server 1, and to R3's Fa0/1)
2. 4 (to Laptop1, to the second laptop, to Server 1, and to R3's Fa0/1)
3. 3 data links
4. 3 data links (PC4 to Laptop1; PC4 to 2nd Laptop; PC4 to Router R3)
5. Source: 00-11-22-A4-B4-C4, Destination: 00-11-22-A1-B1-C1, The source and destination addresses remain the same.
6. Source: 00-11-22-A2-B2-C2, Destination: 00-11-22-A1-B1-C1, The source and destination addresses remain the same.

Exercise 2-6

1. 4 (to PC1, to the second PC, to the printer, and to the R1's LAN port)
2. 4 (to IP Phone, to the second PC, to the printer, and to the R1's LAN port)
3. 3 data links

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4. 3 data links
5. 3 data links
6. 4 data links
7. Initial frame: Source: 33-44-55-A1-B1-C1, Destination: 33-44-55-A2-B2-C2
   Last frame: Source: 00-11-22-A1-B1-C1, Destination: 33-44-55-A2-B2-C2
   Yes, data link addresses change in each data link.
8. 3 frames
9. Source: 00-11-22-A1-B1-C1, Destination: 00-11-22-A4-B4-C4
10. 4 frames

Exercise 2-7

1. 3 LANs and 3 WAN connections
2. 6
3. 7
4. LAN and WAN links use different signaling methods.

CHAPTER EXERCISE QUESTIONS

1. B
2. E
3. A
4. B
5. C
6. D
7. B
8. C
9. A
10. C
11. E
12. D
13. E
14. B
15. B
16. C
17. B
18. D
19. C
20. D
21. A
22. C
23. E
24. D
25. C

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