1. Choose the correct options defining OSI protocol layers/sublayers and their functionality. [MSQ]

1) Data Link layer and Variable Size Framing

2) Data Link Layer and Error Correction

3) Data Link Layer and Error Detection

4) Network Layer and Congestion control

A) 1 & 2 only

B) 2 & 3 only

C) 1, 2 & 3 only

D) 4 only

Answer:(C)
Explanation:

1- True, DL has functionalities of framing stream of bits from PL in two ways: Fixed-Size Framing and Variable-Size Framing.
2- True, DL has error control, which is responsible for finding errors in frames of bits using parity check, CRC, Checksum
3- True, DL can detect all the errors like 1-bit errors, Multiple bit errors and Burst errors using error detection techniques like Parity Check, Checksum and Cyclic Redundancy Check (CRC)
4- False, The Network Layer has the functionality of routing packets based on destination IP address, not congestion control.

2. Choose the correct options for defining TCP-IP Layers and protocols used. [MSQ]

1) Network Layer with ARP

2) Transport Layer with UDP

3) Network Layer with ICMP

4) Data Link Layer DNS

A) 1 & 2 only

B) 2 & 3 only

C) 1, 2 & 3 only

D) 4 only

Answer:(C)
Explanation:

Network Layer has ARP, RARP, ICMP and IGMP
TCP UDP protocols work at the Transport Layer.
The Data Link layer has a Point protocol, not DNS. DNS is an application Layer protocol.

3. Which one of the following protocols is used to resolve one form of address to another one? [MSQ]

1) DNS 2) ARP 3) DHCP 4) RARP

A) 1 & 2 only

B) 2 & 3 only

C) 1, 2 & 3 only

D) 1, 2 & 4 only

Answer:(D)
Explanation:

DHCP is a dynamic host configuration protocol that allocates one of the unused IP addresses. Except for DHCP, all remaining protocols are used to resolve one form of address to another one.

1. DNS is going to convert the hostname to IP address.
2. ARP is going to convert IP to MAC.
3. DHCP is going to assign IP dynamically.
4. RARP is going to convert MAC to IP.

4. Which of the following is correct? [MSQ]

1) The network layer is responsible for packet delivery from host to host.
2) IPv4 addresses are unique.
3) Router and Bridge work at the Network layer.
4) Communication at the network layer in the Internet is Connectionless.

A) 1 & 2 only
B) 2 & 3 only
C) 1, 2 & 3 only
D) 1, 2 & 4 only

Answer:(D)
Explanation:

1- True, Network Layer uses a logical address called IP address, which is used to identify every device on the Internet.
2- True, IPv4 addresses are unique because No two devices on the Internet can never have the same address at the same time.
3- False, The Router works at the Network Layer, but the bridge works at the Data Link Layer
4- True, The Internet has chosen this type of service at the network layer; the reason for this decision is that the Internet is made of so many heterogeneous networks that it is almost impossible to create a connection from the source to the destination without knowing the nature of the networks in advance.

5. Which address is used on the internet for employing the TCP/IP protocols?[MSQ]

1) Physical address 2) Logical address

3) Port address 4) None of these

A) 1 & 2 only B) 2 & 3 only

C) 1, 2 & 3 only D) 1, 2 & 4 only

Answer:(C)
Explanation:

The physical, logical and port addresses are used in the TCP/IP protocol.

6. Which layer is responsible for process-to-process delivery in a general network model?

1) Network layer 2) Transport layer

3) Session layer 4) Data link layer

A) 1 & 2 only B) 2 only

C) 1, 2 & 3 only D) 1, 2 & 4 only

Answer:(B)
Explanation:

The role of the Transport layer (Layer 4) is to establish a logical end-to-end connection between two systems in a network.
The protocols used in the Transport layer are TCP and UDP. The transport layer is responsible for the segmentation of the data.
It uses ports for the implementation of process-to-process delivery.

7. Which layer provides the services to the user?

1) Application layer 2) Session layer

3) Presentation layer 4) Physical layer

A) 1 only

B) 2 & 3 only

C) 1, 2 & 3 only

D) 1, 2 & 4 only

Answer:(A)
Explanation:

In networking, a user mainly interacts with the application layer to create and send information to other computers or networks. The application layer provides the interface between applications and the network.
It is the top-most layer in both the TCP/IP and the OSI model.

Question 8: Match the following to one or more layers of the OSI model: [MSQ]

A) 1-g,2-c,3-b,4-d

B) 1-b,2-c,3-a,4-d

C) 1-a,2-c,3-b,4-d

D) 1-e,2-c,3-f, 4-d

1. Transport Layer	**a. Reliable process-to-process message delivery** **b. Route selection**
2. Data Link Layer	**c. Defines frames** **d. Provides user services such as e-mail and file transfer**
3. Network Layer	**e. Uses service point addressing** **f. Delivery of packets as an individual entity.**
4. Application Layer	**g. Delivery of each packet independently**

Answer:(C,D)
Explanation:
Transport Layer:
1. Reliable process-to-process message delivery
2. Uses Service point addressing called port numbers

Data Link Layer:
1. Defines frames

Network Layer:
1. Route selection
2. Delivery of each packet independent of the entire message

Application Layer:
1. Provides user services such as e-mail and file transfer.

9. Match the protocols from Group I to one or more in Group II:

A) 1- A,2-B,3-C,4-D,5-E,6-F

B) 1- B,2-B,3-C,4-E,5-D,6-F

C) 1- A,2-B,3-G,4-E,5-D,6-H

D) 1- B,2-B,3-G,4-D,5-E,6-H

Group I	Group II (port, TCP/UDP)
1. TELNET	A. 23 TCP
2. SMTP	B. 25 TCP
3. DHCP-SERVER	C. 67 UDP
4. FTP - DATA	D. 20 TCP
5. FTP - CONTROL	E. 21 TCP F. 68 UDP
6. DHCP-CLIENT	G. 67 TCP
	H. 68 TCP

Answer:(A)

Port Number	TCP/UDP	Protocol
20	TCP	FTP-DATA
21	TCP	FTP-CONTROL
22	TCP	SSH
23	TCP	TELNET
25	TCP	SMTP
67	UDP	DHCP-SERVER
68	UDP	DHCP-CLIENT
80	TCP	HTTP
110	TCP	POP-3
443	TCP	HTTPS