Quiz 1

Which of the following techniques is used to share a single physical link with multiple logical flows?

In the context of network reliability, there could be many classes of failures including (select all correct answers)

* Bit Error Failure
* Node Failure
* Link Failure
* Packet Loss

Transport layer of the OSI model lies between Network and :

* Session
* Data Link
* Application
* Presentation

Network layer handles switching and routing among nodes within a packet-switched network.

The following are considered categories of networks based on the size of the network except:

* DAN
* LAN
* WAN
* SAN

The following are all forms of multiplexing technologies except :

* Packet division
* Frequency division
* Time Division
* Statistical

Each protocol in the OSI layers provide two interfaces (select all correct answers) :

* Between modules/layers on the same machine
* Between same modules/layers on peer machines
* Between the source node and the destination node.

A circuit-switched network establishes a dedicated circuit from source to destination node. (T/F)

The seven layers of the OSI model somewhat correspond to the four layers that make up the TCP/IP protocol. (T/F)

The socket interface defines the following operations (select all correct answers)

* Creating a socket.
* Attaching the socket to the network.
* Creating child sockets.
* Sending/receiving messages.
* Closing the socket.

Quiz 2

In the NRZ encoding scheme the receiver keeps an average of the signals it has received. It then uses this average to distinguish between \_\_\_\_\_\_\_ signals. ans:

In Manchester encoding the XOR of the \_\_\_\_ and the \_\_\_\_\_ is transmitted. ans:

The OSI link layer is responsible for (select all correct answers): (ans)  
Routing

Error detection

Access Control

Framing

What device enables the nodes (connected via a link) to exchange frames? Ans:

HDLC stands for High Level Data Link Control. The frame uses the sequence 01111110 to indicate the beginning and ending of the frame. On the sending side, any time five consecutive 1’s have been transmitted from the body of the message the sender inserts a \_\_\_\_\_\_ before transmitting the next bit. ans:

Basic idea behind error detection is to add \_\_\_\_\_\_\_\_\_\_\_ information to the frame that can be used to determine if errors have been introduced. ans:

The goal of a highly efficient error detection technique is to \_\_\_\_\_\_\_\_\_ the redundant bits and \_\_\_\_\_\_\_\_\_\_\_\_ protection. ans:

Multiple Ethernet segments can be joined together by \_\_\_\_\_\_\_\_\_\_. ans:

Ethernet uses the Carrier Sense Multiple Access/Collision Detection (CSMA/CD) technology. Multiple access means that a set of nodes send and receive frames over a \_\_\_\_\_\_\_ link. ans:

An Ethernet address consisting of all 1s is treated as a \_\_\_\_\_\_\_\_\_ address. ans:

Quiz 3

Layer 3 switches packets based on their \_\_\_\_\_\_\_ while layer 2 switches packets based on their \_\_\_\_\_\_\_.

Spanning tree algorithm is a \_\_\_\_\_\_\_\_ used by a set of \_\_\_\_\_\_\_ to agree upon a spanning tree for a particular extended LAN.

\_\_\_\_\_\_\_\_\_\_\_is a process performed locally at a node and consists of taking a packet, looking at its destination address, consulting a table, and sending the packet in a direction determined by that table.

\_\_\_\_\_\_\_\_\_is more global and distributed. It is an algorithm or process by which forwarding tables are built and updated dynamically.

These routing protocols are based on the Distance Vector approach (select all correct answers).

RIP

These routing protocols are based on the Link State approach (select all correct answers).

OSPF

IS-IS

In Distance Vector based routing protocols the convergence is slower compared to routing protocols based on Link State algorithm.

True

False

IP service model is based on best-effort delivery of packets, meaning (select all correct choices):

Packets are not delayed for a long time.

Packets may be lost.

Duplicate copies of a packet may be delivered.

Packets may be delivered out of order.

An individual Link State Packet (LSP), in Link State Routing protocol, provides information/updates about its directly-connected links to all nodes.

True

False

After the LSA’s (Link State Announcements) are sent out, every receiving node will then build a LSDB (a link-state database) containing information about the network topology.

True

False

In Distance Vector based protocols, every T seconds (or minutes), each router sends its routing table to all other routers in the network, and each router then updates its routing table based on the new information.

True

False

Quiz 4

1)Process-to-process communication is accomplished by the\_\_\_\_\_ layer of the network architecture.

Transport

2)If you needed to implement a live streaming service and did not have plenty of bandwidth, it would be best to use \_\_\_\_ for the transport protocol.

3) Which has the simpler header in terms of size and complexity(TCP or UDP)?

It is not a primary job of the transport layer to address routing decision. (T/F?)

TCP guarantees reliable, in-order delivery of a stream of bytes.(T/F?)

In order to protect against sequence number wraparound problem a 32-bit unsigned \_\_\_\_ is added the TCP header.

The packets exchanged between TCP peers are \_\_\_:

Bytes

Frames

Segments

TCP headers do not have a fixed length.(T/F?)

The \_\_\_\_flags are used when establishing and terminating a TCP connection, respectively.

The \_\_\_\_ flag signifies that the receiver has become confused, it received a segment it did not expect to receive—and so wants to abort the connection.

Quiz 5

Congestion control involves preventing too much data from being injected into the network, thereby causing switches or links to become overloaded. (T/ F)

In a host-centric design, the routers observe the network conditions and adjust their behavior accordingly. (T/F)

In a reservation-based approach, the end hosts begin sending data and then adjust their sending rate according to the feedback they receive. (T/F)

The AIMD is the right approach to use when the source is operating close to the available capacity of the network.

AIMD Algorithm divides CongestionWindow by \_\_\_\_ \_\_ whenever a timeout occurs and increments it by \_\_\_\_\_\_\_ packet per RTT to take advantage of newly available capacity in the network.

Congestion window is maintained by the \_\_\_\_\_\_\_\_\_ and the advertised window is maintained by the \_\_\_\_\_\_ .

In the slow start approach, when congestion is detected, the source uses slow start again to rapidly increase the sending rate up to the \_\_\_\_\_\_\_\_\_\_\_ value, and then additive increase is used beyond this point.

In Additive Increase Multiplicative Decrease (AIMD), TCP source uses \_\_\_\_\_\_\_\_\_\_ to limit how much data it is allowed to have in transit at a given time.

By using ACKs to pace the transmission of packets, TCP is said to be \_\_\_\_\_\_\_.

The idea of Fair Queuing is to maintain a separate queue for each \_\_\_\_\_ currently being handled by the router.

Quiz 6

Question 1

The congestion control mechanism in TCP repeatedly increases the number of packets in transition to find the point at which congestion occurs, and then it backs off from this point.  
 True   
 False

Ans  
   
Question 2

In router-centric congestion avoidance the routers, either implicitly or explicitly, notify each other about congestions.   
 True   
 False   
 Ans

Question 3  
  
DEC method involves explicit notification of sources while the RED method involves the implicit notification of sources, about congestions.   
 True   
 False   
 Ans

Question 4  
  
DEC method involves dropping packets in order to implicitly notify the source about congestions.  
 True   
 False

Ans  
   
Question 5  
  
Random Early detection method (RED) involves setting a bit (flag) in the TCP packet to notify the source about congestions.   
 True   
 False

Ans

Question 6  
  
In source-based congestion avoidance method used in TCP, every two round-trip delays, the algorithm checks to see if the current RTT is greater than the average of the minimum and maximum RTTs seen so far. If it is, then the algorithm decreases the congestion window by one-eighth.  
 True   
 False

Ans  
   
Question 7  
  
A protocol that detects tampering is said to provide data integrity.  
 True   
 False   
 Ans

Question 8  
  
A protocol that ensures that you really are talking to whom you think you’re talking is one that provides authentication.  
 True   
 False

Ans  
   
Question 9  
  
Denial of Service (DoS) attacks means that users are unable to access the website because it is being overwhelmed by bogus requests.  
 True   
 False

Ans  
   
Question 10  
  
Symmetric key encryption/decryption uses the same key for both encryption and decryption. However, asymmetric key encryption/decryption uses a pair of related keys, one for encryption and a different one for decryption.   
 True   
 False

Ans

Midterm Questions

1. In computer network nodes are
   1. the computer that originates the data
   2. the computer that routes the data
   3. the computer that terminate the data
   4. all of the mentioned
2. In the layer hierarchy as the data packet moves from the upper to the lower layers, headers are:
   1. added
   2. removed
   3. rearranged
   4. modifed
3. The \_\_\_\_\_\_\_ is the physical path over which a message travel.
   1. path
   2. medium
   3. protocol
   4. route
4. A set of rules that governs data communication.
   1. Protocols
   2. Standards
   3. RFCs
   4. None of the mentioned
5. Two devices share a link in \_\_\_\_\_\_\_ connection
   1. Unipoint
   2. Multipoint
   3. Point to point
   4. Non of the mentioned.
6. OSI stands for
   1. Open system interconnection
   2. operating system interface
   3. potical service implementation
   4. none of the mentioned
7. TCP/IP reference model does not have \_\_\_\_\_\_ layer but OSI model have this layer.
   1. session layer
   2. presentation layer
   3. application layer
   4. both (a) and (b)
8. TCP/IP model was developed \_\_\_\_\_ the OSI model.
   1. Prior to
   2. After
   3. Simutaneous to
   4. none of the mentioned
9. Which layer provides the services to user?
   1. Application layer
   2. Session layer
   3. Presentation layer
   4. None of the mentioned
10. In the OSI model , as a data packet moves from the lower to the upper layers, headers are \_\_\_\_\_\_\_\_\_ .
    1. Added
    2. Removed
    3. Rearranged
    4. Noen of the mentioned
11. A single channel is shared by multiple signals by
    1. Analog modulation
    2. Digital modulation
    3. Multiplexing
    4. None of the mentioned
12. The data link layer takes the packets from \_\_\_\_\_\_\_ and encapsulates them into frames for transmission.
    1. Network layer
    2. Physical layer
    3. Transport layer
    4. Application layer
13. Which one of following task is NOT done by data link layer?
    1. Framing
    2. Error control
    3. Flow control
    4. Channel coding
14. CRC stands for
    1. Cyclic redundancy check
    2. Code repeat check
    3. Code redundancy check
    4. Cyclic repeat check
15. Which one of the following is a data link protocol?
    1. Ethernet
    2. Point to point protocol
    3. HDLC
    4. All of the mentioned
16. The network layer concerns with
    1. Bits
    2. Frames
    3. Packets
    4. None of the mentioned
17. The 4 byte IPv4 address consists of
    1. Network address
    2. Host address
    3. Both a and b
    4. None of the mentioned
18. A subset of a network that includes all the routers but contains no loops is called
    1. Spanning tree
    2. Spider structure
    3. Spider tree
    4. None of the mentioned
19. The Network Layer Protocol of internet is
    1. Ethernet
    2. Internet protocol
    3. Hypertext transfer
    4. None
20. Ethernet frame consists of
    1. Mac address
    2. IP address
    3. Both a and b
    4. None of the mentioned
21. Mac address is of
    1. 24 bits
    2. 36 bits
    3. 42 bits
    4. 48 bits
22. Maximum size of payload field in ethernet frame is
    1. 1000 bytes
    2. 1200 byets
    3. 1300 bytes
    4. 1500 bytes
23. Multiplexing technique that shifts each signal to a different carrier frequency
    1. FDM
    2. TDM
    3. Either a or b
    4. Both a or b
24. In this topology there is a central controller or hub
    1. Star
    2. Mesh
    3. Ring
    4. Bus
25. Data communication system spanning states, countries, or the whole world is
    1. LAN
    2. WAN
    3. MAN
    4. DAN
26. Data Communication system whithin a building or a campus is:
    1. LAN
    2. WAN
    3. MAN
    4. None of the mentioned
27. WAN stands for
    1. World area network
    2. Wide area network
    3. Web area network
    4. None
28. Some packet switches use this principle
    1. Stop and wait protocol
    2. Store and forward
    3. Both of the mentioned
    4. None of the mentioned
29. Which of the following field in IPv4 datagram is not related to fragmentation?
    1. Flags
    2. Offset
    3. TOS
    4. Identifier
30. The TTL field has value 10. How many routers max can process this datagram
    1. 11
    2. 5
    3. 10
    4. 1
31. If value in protocol field is 17, the transport layer protocol used is
    1. TCP
    2. UDP
    3. Either
    4. None
32. Which of these is not applicable for IP protocol
    1. Is connectionless
    2. Offer reliable service
    3. Offer unreliable service
    4. None of the mentioned
33. Which field helps to check rearrangement of the fragments?
    1. offset
    2. flag
    3. TTL
    4. identifier
34. ATM and frame relay are
    1. virtual circuit networks
    2. datagram networks
    3. both (a) and (b)
    4. none of the mentioned
35. Internet works on
    1. packet switching
    2. circuit switching
    3. both (a) and (b)
    4. none of the mentioned
36. Which protocol assigns IP address to the client connected in the internet?
    1. DHCP
    2. IP
    3. RPC
    4. none of the mentioned
37. Which of the following delay is faced by the packet in travelling from one end system to another?
    1. Propagation delay
    2. Queuing delay
    3. Transmission delay
    4. All of the mentioned
38. Comprehensive questions