Started on	Monday, 6 November 2023, 9:30 AM
State	Finished
Completed on	Monday, 6 November 2023, 10:37 AM
Time taken	1 hour 6 mins
Grade	**51.00** out of 60.00 (**85**%)

Question **1**

Complete

Mark 1.00 out of 1.00

In Pure ALOHA, if the frame transmission time is T_f and the average time to the next frame arrival is $2T_f$, what is the maximum channel utilization that can be achieved?

- a. 100%
- b. 50%
- c. 25%
- d. 36.8%

Question **2**

Complete

Mark 1.00 out of 1.00

What is the type of the destination address of these Ethernet address 4A:30:10:21:10:1A

- a. Multicast
- b. Unicast
- c. Not a valid address
- d. Broadcast

Question **3**

Complete

Mark 1.00 out of 1.00

Error detection and correction are offered by both

- a. Data link layer and Transport Layer
- b. Data link layer and Network Layer
- c. Physical Layer and Data link Layer
- d. Network Layer and Transport Layer

Question **4**

Complete

Mark 1.00 out of 1.00

Suppose a packet of length 256 bits travels from one router R1 to another router R2 located at 200 kms distance through Ethernet cable. The transmission rate of the cable is 100 bps and the propagation speed of the cable is 10kms/min. Then the propagation and transmission delay of the packet to reaches from R1 to R2 is

- a. 1200 secs, 20 secs
- b. 1000 secs, 2.56 secs
- c. 1200 secs, 2.56 secs
- d. 1000 secs, 20 secs

Question **5**

Complete

Mark 1.00 out of 1.00

In _____, each station is forced to send only at the beginning of the time slot.

- a. CSMA/CA
- b. Pure Aloha
- c. CSMA/CD
- d. Slotted Aloha

Question **6**

Complete

Mark 0.00 out of 1.00

Assume each frame carries 1000 bits of data, how long does it take to send 1 million (1,000,000) bits of data using sliding window protocol. The distance between sender and receiver is 5000Km and the propagation speed is 2 x10^8 m/s. If there is no transmission, waiting and processing delays, then what will be the optimal window size?

- a. N = 1
- b. N = 0
- c. None of these
- d. N = ∞

Question **7**

Complete

Mark 1.00 out of 1.00

Which of the following devices forwards packets between networks by processing the routing information included in the packet?

- a. Router
- b. Hub
- c. Bridge
- d. Firewall

Question **8**

Complete

Mark 1.00 out of 1.00

In the OSI model, the MAC addresses are used as the addressing mode in which layers?

- a. Layer 3 (Network) and Layer 4 (Transport)
- b. Layer 1 (Physical) and Layer 2 (Data Link)
- c. Layer 4 (Transport) and Layer 5 (Session)
- d. Layer 2 (Data Link) and Layer 3 (Network)

Question **9**

Complete

Mark 1.00 out of 1.00

A sender-receiver employs even parity for error correction scheme, what will be the parity bit for 1001011?

- a. 0
- b. 1
- c. 2
- d. None of these

Question **10**

Complete

Mark 1.00 out of 1.00

What technique does the Data Link Layer use to manage flow control and avoid overwhelming the receiver?

- a. Sliding Window Protocol
- b. ACK/NACK Signals
- c. Buffering
- d. Error Correction Codes

Question **11**

Complete

Mark 1.00 out of 1.00

A shared broadcast medium of transmission rate 5 Mbps is being shared by 10 users (U1, U2, ...U10). Calculate the maximum transmission rate of each of the users if the channel access scheme used is FDMA. If instead of FDMA the scheme being used is CDMA then what will be the maximum transmission rate of each of the users?

- a. 50 Mbps, 5 Mbps
- b. None of these
- c. 500 Kbps, 5000 Kbps
- d. 5000 Kbps, 5000 Kbps

Question **12**

Complete

Mark 1.00 out of 1.00

What is the total vulnerable time value of pure Aloha?

- a. ½ T_{fr}
- b. $2 \times T_{fr}$
- c. T_{fr}
- d. None of these

Question **13**

Complete

Mark 0.00 out of 1.00

Fragmentation is done in ..... layer.

- a. Transport Layer
- b. Network Layer
- c. Data link Layer
- d. Physical layer

Question **14**

Complete

Mark 1.00 out of 1.00

What are the propagation time and the transmission time for a 5Mbyte message (an image) if the transmission rate of the network is 1Mbps? Assume that the distance between the sender and the receiver is 8000 km and that light travels at 4×10^9 m/s.

- a. 50msecs, 40secs
- b. 2msecs, 40secs
- c. 2msecs, 40msecs
- d. 50msecs, 40msecs

Question **15**

Complete

Mark 0.00 out of 1.00

Which multiplexing technique combines multiple signals for transmission over a single channel?

- a. FDM (Frequency Division Multiplexing)
- b. SDM (Space Division Multiplexing)
- c. CDM (Code Division Multiplexing)
- d. TDM (Time Division Multiplexing)

Question **16**

Complete

Mark 1.00 out of 1.00

The length of the .....of a specific packet will depend on the number of earlier-arriving packets that are queued and waiting for transmission onto the link.

- a. Transmission delay
- b. None of these
- c. Propagation delay
- d. Queuing delay

Question **17**

Complete

Mark 0.00 out of 1.00

In what unit does the Data Link Layer encapsulate data for transmission?

- a. Packets
- b. Segments
- c. Bits
- d. Frames

Question **18**

Complete

Mark 1.00 out of 1.00

The maximum size of payload field in Ethernet frame is

- a. 1200 bytes
- b. 1500 bytes
- c. 1000 bytes
- d. 1300 bytes

Question **19**

Complete

Mark 1.00 out of 1.00

Which technique does CSMA/CA primarily use to avoid collisions in wireless networks?

- a. Implementing collision detection algorithms
- b. Increasing the transmission speed
- c. Splitting data into smaller segments
- d. Continuous monitoring of the channel before transmitting

Question **20**

Complete

Mark 1.00 out of 1.00

Which multiple access techniques is used by IEEE 802.11 standards for wireless LANs?

- a. CSMA/CA
- b. CSMA
- c. CSMA/CD
- d. ALOHA

Question **21**

Complete

Mark 1.00 out of 1.00

What are not the responsibilities of the Data link Layer?

- a. Error detection
- b. IP addressing
- c. Framing
- d. MAC addressing

Question **22**

Complete

Mark 1.00 out of 1.00

What is the role of logical link control sublayer in layer 2?

- a. Connection Establishment
- b. Error detection
- c. Sequencing
- d. Acknowledgment

Question **23**

Complete

Mark 1.00 out of 1.00

A three-layer switch can be called as.....

- a. Router
- b. Bridge
- c. None of these
- d. Repeater

Question **24**

Complete

Mark 1.00 out of 1.00

Which of the following statement is correct for Slotted Aloha

- a. divide time into discrete time intervals
- b. divide time into discrete time intervals and also requires global time synchronization
- c. require global time synchronization
- d. None of these

Question **25**

Complete

Mark 1.00 out of 1.00

In the transfer of files between four pairs of client-servers through a common transmission channel of transmission rate 1 Mbps. All the server access links have a transmission rate of 2 Mbps and all the client access links have a transmission rate of 2.5 Mbps, the throughput of this network will be

- a. 2.5 Mbps
- b. None of these
- c. 0.25 Mbps
- d. 2 Mbps

Question **26**

Complete

Mark 1.00 out of 1.00

The sender employs the "Go Back 10 ARQ" scheme. A 50 Kbps link has a propagation speed of 2×10^8 m/s. The transmitter and receiver is at 2000 km distance from each other. Each frame is 100 bytes long, assuming no transmission delay what will be the minimum round trip time delay for transmission of 1 million bits?

- a. 20 ms
- b. None of these
- c. 50 ms
- d. 10 ms

Question **27**

Complete

Mark 1.00 out of 1.00

What technology enables the transmission of data over long distances using light pulses in optical fibers?

- a. Twisted pair cables
- b. Wireless transmission
- c. Fiber optics
- d. Coaxial cables

Question **28**

Complete

Mark 1.00 out of 1.00

How many bits are required for an IPv4 address, including network and host portions?

- a. 32 bits
- b. 16 bits
- c. 128
- d. 64 bits

Question **29**

Complete

Mark 1.00 out of 1.00

What is the default minimum and maximum frame size in Ethernet?

- a. 128 bytes and 2048 bytes
- b. 512 bytes and 8192 bytes
- c. 256 bytes and 4096 bytes
- d. 64 bytes and 1518 bytes

Question **30**

Complete

Mark 1.00 out of 1.00

What are not the responsibilities of the Network Layer?

- a. Framing
- b. Path determination
- c. IP addressing
- d. Routing

Question **31**

Complete

Mark 1.00 out of 1.00

Define the type of this Ethernet frame destination address **FF:FF:FF:FF:FF:FF**

- a. None of these
- b. Multicast
- c. Unicast
- d. Broadcast

Question **32**

Complete

Mark 1.00 out of 1.00

What action does CSMA/CD take when a collision is detected?

- a. Request retransmission from the receiver
- b. Increase transmission power to overcome the collision
- c. Stop transmitting and wait a random amount of time
- d. Split the frame into smaller segments

Question **33**

Complete

Mark 0.00 out of 1.00

Suppose we want to transmit the message 11001001 and protect it from errors using CRC polynomial x^3+1. If polynomial long division method is used than determine the message that should be transmitted.

- a. **11001001001**
- b. **11001001000**
- c. None of these are correct option
- d. **11001001011**

Question **34**

Complete

Mark 1.00 out of 1.00

What is the dotted decimal notation of this binary IPV4 address **10010001 00001110 00000110 00001000**?

- a. 145.14.6.8
- b. 145.12.6.8
- c. 225.14.6.8
- d. None of these

Question **35**

Complete

Mark 1.00 out of 1.00

In Carrier Sense Multiple Access, which CSMA scheme senses the channel, if idle it sends the data, otherwise it continuously keeps on checking the medium for being idle and transmits unconditionally as soon as the channel gets idle.

- a. P-persistent
- b. 1-persistent
- c. Non-persistent
- d. O-persistent

Question **36**

Complete

Mark 1.00 out of 1.00

What is the function of a switch in a network?

- a. Controls network traffic based on IP addresses
- b. Connects multiple networks together
- c. Forwards data packets to specific devices based on MAC addresses
- d. None of these are correct option

Question **37**

Complete

Mark 1.00 out of 1.00

Which of the following is not a valid IP address?

- a. 192.25.256.8
- b. 145.6.14.1
- c. 145.6.14.8
- d. 192.168.2.1

Question **38**

Complete

Mark 1.00 out of 1.00

An Ethernet MAC sublayer receives 1501 bytes from the network layer. How many frames need to be transmitted and what will be the size of the data in each frame?

- a. Two frames, Frame 1 data size 1500 bytes, Frame 2 data size 1500 bytes
- b. Two frames, Frame 1 data size 1500 bytes, Frame 2 data size 1 byte
- c. Two frames, Frame 1 data size 750 bytes, Frame 2 data size 751 bytes
- d. None of these

Question **39**

Complete

Mark 1.00 out of 1.00

Which one of the following is the start frame delimiter (SDF) flag in Ethernet frame

- a. 10101010
- b. 10101011
- c. 00000000
- d. 11111111

Question **40**

Complete

Mark 1.00 out of 1.00

Station A transmits 2 Megabytes packet to Station B, at a transmission rate of 1Mbps. The distance between the two stations is 4000 km, and the propagation speed of the link is 4×10^9 m/s. Determine the transmission delay, propagation delay, and the round-trip time delay between A and B for the entire packet transmission.

- a. **transmission delay 16 msecs, propagation delay 1 msecs, round-trip time delay ≈ 32 secs**
- b. **transmission delay 16 msecs, propagation delay 1 msecs, round-trip time delay ≈ 32 msecs**
- c. **transmission delay 16 secs, propagation delay 1 secs, round-trip time delay ≈ 32 secs**
- d. **transmission delay 16 secs, propagation delay 1 msecs, round-trip time delay ≈ 32 secs**

Question **41**

Complete

Mark 1.00 out of 1.00

If each frame carries 1000 bits of data, how long does it take to send 2 million (2,000,000) bits of data using (a) Stop-and-Wait ARQ, (b) Go-Back-N ARQ and (c) Selective Repeat ARQ. Assume that all three ARQs are using 4 bits for representing sequence numbers. The distance between sender and receiver is 5000Km and the propagation speed is 2 $x10^8$ s/ m. Ignore transmission, waiting and processing delays. Assume no data or control frame is lost or damaged.

- a. (a) 0.01 secs, (b) 50 msecs, (c) 625 msecs
- b. (a) 0.1 msecs, (b) 6.25 msecs, (c) 6.25 msecs
- c. (a) 0.1 secs, (b) 6.25 secs, (c) 6.25 secs
- d. (a) 0.01 secs, (b) 6.25 secs, (c) 25 msecs

Question **42**

Complete

Mark 1.00 out of 1.00

In slotted ALOHA, the vulnerable time is _____ the frame transmission time.

- a. half of a frame transmission time
- b. same as the a frame transmission time
- c. twice of a frame transmission time
- d. None of these

Question **43**

Complete

Mark 1.00 out of 1.00

Which layer is responsible for the process to process delivery in a general network model?

- a. Network layer
- b. Transport layer
- c. Session layer
- d. Data link layer

Question **44**

Complete

Mark 1.00 out of 1.00

Which are end system devices

- a. web servers
- b. All of these
- c. mail servers
- d. smartphones

Question **45**

Complete

Mark 1.00 out of 1.00

Suppose a sender A needs to send a message consisting of 11 frames to receiver B using a sliding window (window size 4) and Go-Back-N ARQ flow control strategy. All packets are ready and immediately available for transmission. If the 5th frame in the queue that A transmits gets lost at the first attempt (but no ACKs from B ever get lost), then what is the total number of frames that A will transmit for sending the entire message to B?

- a. 18
- b. 15
- c. 13
- d. None of these are correct option

Question **46**

Complete

Mark 1.00 out of 1.00

Which characteristic defines the Physical Layer in the OSI model?

- a. Switching and routing
- b. Packet reordering and retransmission
- c. Bit synchronization and transmission
- d. Data framing and addressing

Question **47**

Complete

Mark 1.00 out of 1.00

In reference to OSI model, TCP/IP model does not have _____

- a. Session layer
- b. Application layer
- c. Physical layer
- d. Transport layer

Question **48**

Complete

Mark 1.00 out of 1.00

What is the Hexadecimal equivalent of the following Ethernet address

010110100001000101010101000110001010101000001111

- a. 5A1155189A0E
- b. 5A115514AA0F
- c. 5A115518AA0F
- d. None of these

Question **49**

Complete

Mark 1.00 out of 1.00

The time required to examine the packet's header and determine where to direct the packet is part of _____

- a. Queuing delay
- b. Transmission delay
- c. Propagation delay
- d. Processing delay

Question **50**

Complete

Mark 0.00 out of 1.00

How many hexadecimal characters are present in a MAC address?

- a. 8
- b. 12
- c. 4
- d. 6

Question **51**

Complete

Mark 0.00 out of 1.00

Station A uses 50 byte packets to transmit messages to Station B using a sliding window protocol. The round trip time delay between A and B is 75ms and the bottleneck bandwidth on the path A and B is 150 kbps. What is the optimal window size that A should use? Consider the round trip time delay is a combination of propagation delay and transmission delay.

- a. 29
- b. 21
- c. None of these
- d. 27

Question **52**

Complete

Mark 1.00 out of 1.00

Which of the following option is correct?

In wireless distribution system

- a. there is no access point
- b. multiple access points are inter-connected with each other
- c. access points are not required
- d. only one access point exits

Question **53**

Complete

Mark 1.00 out of 1.00

What are the propagation time and the transmission time for a 500kbyte message (an email) if the transmission rate of the network is 1Gbps? Assume that the distance between the sender and the receiver is 14000 km and that light travels at 2×10^9 m/s.

- a. 7ms, 4ms
- b. 7ms, 8ms
- c. 8ms, 4ms
- d. 8ms, 7ms

Question **54**

Complete

Mark 0.00 out of 1.00

What is the purpose of MAC addresses in communication networks?

- a. To establish a secure VPN connection
- b. To assign IP addresses to devices
- c. To handle routing between networks
- d. To identify the network interface card (NIC) of a device

Question **55**

Complete

Mark 1.00 out of 1.00

What is the primary responsibility of the Physical Layer in the OSI model?

- a. Transmitting raw bits over a physical medium
- b. Ensuring error-free transmission
- c. Providing logical addressing
- d. Establishing end-to-end connections

Question **56**

Complete

Mark 0.00 out of 1.00

A 500 Mbps satellite link has a propagation delay of 500 ms. The transmitter employs the "Go Back 8 ARQ" scheme. Assuming that each frame is 5 Megabytes long, what is the maximum data rate possible?

- a. 500 Kbps
- b. 296 Kbps
- c. 296 Mbps
- d. 592 Mbps

Question **57**

Complete

Mark 1.00 out of 1.00

Layer that translates between physical (MAC) and logical addresses is .....

- a. Network
- b. Physical
- c. Transport
- d. Datalink

Question **58**

Complete

Mark 1.00 out of 1.00

Which is of the following statement is incorrect, if the transmission bandwidth of a shared broadcast media of 50 Mbps is shared by 500 users then,

- a. Using TDMA scheme, each of the users have an access to 100 Kbps of bandwidth
- b. Using CDMA scheme, each of the users have an access to 50 Mbps of bandwidth
- c. Using FDMA scheme, each of the users have an access to 100 Kbps of bandwidth
- d. Using CDMA scheme, each of the users have an access to 100 Kbps of bandwidth

Question **59**

Complete

Mark 1.00 out of 1.00

Which of the following is a valid MAC address format?

- a. 1234:5678:ABCD:EFGH
- b. 256.128.64.32
- c. 192.168.1.1
- d. 00:1A:2B:3C:4D:5E

Question **60**

Complete

Mark 1.00 out of 1.00

Which of the following protocols is the bit-oriented protocol?

- a. All of the these
- b. HDLC
- c. HTTP
- d. SSL

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