

CS447 – Networks and Data Communications

Quiz #1, June 16, 2026

#1: One of the primary reasons for using “switching networks” is (select the best):

- (a) Improved transmission rate
- (b) Improved reliability
- (c) Improved scalability
- (d) Improved security

Solutions: (c) ((b) can be included) – 10 points for selecting (c), -4 points for selecting (a) or (d)

#2: The advantage(s) in using “datagram packet switching networks” is (are) (select all that apply):

- (a) Quicker transmissions for small messages
- (b) No need for re-ordering the received messages at the receiver side
- (c) Guaranteed quality in transmitting data (messages) to receivers
- (d) Low overhead at intermediate routers

Solution: (a) – 10 points for selecting (a), -4 points for selecting anything else

#3: The advantage(s) in using “virtual-circuit switching networks” is (are) (select all that apply):

- (a) Quicker transmissions for small messages
- (b) No need for re-ordering the received messages at the receiver side
- (c) Guaranteed quality in transmitting data (messages) to receivers
- (d) Low overhead at intermediate routers

solution: (b), (c), (d) – 10 points for selecting (b), (c), (d), -3 for each missing -3 points for selecting anything else

#4: Most of the existing computer networks use protocols because of (select all that apply)

- (a) Using network protocols, any two computers who have the same network protocols installed can communicate even if they never communicate before
- (b) Using network protocols, data transmission will be faster
- (c) Using network protocols, we can transfer messages (payload data) with smaller total amount of network traffic
- (d) Using network protocols, the security in transmitting data always improve

solution: (a) – 10 points for selecting (b), -4 points for selecting anything else

#5: Virtual-circuit switching networks allow transmitting hosts to share network transmission bandwidth because (select all that apply):

- (a) Virtual-circuit switching networks require path setups prior to data transmissions
- (b) Virtual-circuit switching networks use packets to transfer data.
- (c) Virtual-circuit switching networks guarantee in-order data delivery to receivers
- (d) Virtual-circuit switching networks requires routing only once until a session of data transmission is over.

solution: (b) – 10 points for selecting (b), -4 points for selecting anything else

#6: Which of the following statements are correct about LAN (Local Area Networks) – select all that apply:

- (a) Since LANs usually have a high transmission bandwidth (10 Gbps), many LANs are used as backbone transmission medium in the Internet (connecting two routers that are connected over a long distance (e.g., 100 miles or longer)).
- (b) The primary purpose of LANs is to provide physical connectivity to network devices (e.g., networked PCs and network printers) in a computer network.
- (c) Since the signal transmission cables in LANs are shared by many host computers and network devices, a mechanism to control which host computers and network devices can use (transmit signals) is required.
- (d) None of the above

solutions: (b) and (c) – 5 points for each, -4 points for selecting anything else

#7: Which of the following LAN architectures is (are) based on broadcasting (select all that apply)?

- (a) Bus
- (b) Ring
- (c) Star (hub) using an internal bus
- (d) Star (hub) using an internal switch

solutions: (a), (b), (c) – 10 points for selecting (a), (b), (c), -3 for each missing -3 points for selecting (d)

#8: Which of “circuit-switching networks” or “virtual-circuit switching networks” are better for networks that tend to cause frequent signal errors (select one from the following options)?

- (a) circuit-switching networks
- (b) virtual-circuit switching networks
- (c) either circuit-switching or virtual-circuit switching networks (they are equally good)
- (d) None of the above.

solution: (b) – 10 points for selecting (b)

#9: Bridges eliminate (drop) unnecessary network traffic within each bridge using:

- (a) Sender addresses and their port numbers
- (b) Receiver addresses and their port numbers
- (c) Both sender and receiver addresses and their port numbers
- (d) The user ID of the network administrator(s) who set up a bridge

solution: (b) and/or (c) – 10 points for selecting (b) and/or (c)

#10: The advantage(s) in packet encapsulations is (are) (select all that apply):

- (a) Transmission rate (speed) will be improved since the details in packet headers are hidden from the protocol layers which do not have to use the information in those headers
- (b) Flexibility in protocol suite (protocol stack) will be improved in such a way that, when we can replace a protocol in a protocol layer without affecting all other protocol layers
- (c) The amount of the network traffic will decrease since some information will be hidden from the protocol layers which do not have to use the information in those headers
- (d) Security will be improved (when attackers can capture network packets when the packets are being transmitted in the (public) Internet since some information will be hidden from the protocol layers which do not have to use the information in those headers

solution: (b) – 10 points for selecting (b), -4 points for selecting anything else