CSE/EE 461 Final Review Questions

Wetherall, Autumn 2002.

These questions are intended to give you an idea of the kinds of questions you will face on the final. But note, I have not picked them to give carefully balanced coverage of all relevant material, and you should consider them to in addition to reviewing the material probed by the assigned homework questions.

Sample Multiple Choice

These questions were taken from a prior exam.

1. What type of errors cannot be detected by one parity bit?
   a) 1 bit errors
   b) 2 bit errors
   c) 3 bit errors
   d) burst errors

2. What problem does byte stuffing in PPP solve?
   a) Prevents independent clocks in the sender and receiver from drifting
   b) Prevents frame markers from appearing in the data stream
   c) Allows data transmission errors to be detected
   d) Improves coding efficiency

3. Which phrase applies least to the IP service model?
   a) Unordered delivery
   b) Best-effort delivery
   c) Reliable delivery
   d) Single delivery

4. A station on an Ethernet has tried to send its frame 3 times and collided each time. What is the interval over which the station will choose its next backoff delay?
   a) [0…7] times 51.2 microseconds
   b) [1…8] times 51.2 microseconds
   c) [0…15] times 51.2 microseconds
   d) [1…16] times 51.2 microseconds

5. Which of the following is not an advantage of using hierarchical addressing?
   a) Route aggregation
   b) Distributed administration
   c) Shorter addresses
   d) Smaller forwarding tables
   e) Fewer routing messages

6. The Address Resolution Protocol (ARP) is used primarily to translate from:
   a) IP addresses to MAC addresses

b) MAC addresses to IP addresses
c) Host names to IP addresses
d) Local IP addresses to remote IP addresses.

7. Why is the wireless medium access problem arguably more difficult to solve than the wired case? Circle all answers that apply.
a) Wireless signals decay quickly because they spread in all directions
b) Different nodes have different coverage areas
c) Wireless bandwidth is scarce.
d) Not possible to simultaneously transmit and receive on a single frequency band
e) Wireless signals can't be carried at baseband.

8. Compared to always forwarding, the learning bridge algorithm affects:
a) Performance and correctness
b) Performance only
c) Correctness only
d) Neither performance or correctness

9. Which of the following is not a problem caused by IP fragmentation:
a) Performance is degraded when fragmentation occurs at routers
b) End-systems must buffer fragments for reassembly
c) The effective packet loss rate is increased
d) Applications must handle changed message boundaries

10. Which of the following descriptions applies least to BGP routing:
a) Routing between autonomous systems
b) Default-free routing
c) Policy-based routing
d) Metric-based routing

11. The purpose of buffering at routers is best described as to:
a) Match sending and receiving rates
b) Absorb transient traffic bursts
c) Decouple incoming and outgoing rates
d) Statistically multiplex traffic from multiple flows

12. The purpose of flow control as we have defined it in class is to:
a) Prevent the sender from overrunning the network
b) Prevent the sender from overrunning the receiver
c) Prevent the sender from duplicate acknowledgements
d) Prevent the sender from having to retransmit data

13. What kind of acknowledgments are used by TCP?
a) Cumulative, and optionally selective
b) Selective, and occasionally duplicate
c) Positive, and optionally negative

d) Negative, and occasionally cumulative

14. Circle all factors below that directly limit the amount of unacknowledged data that a TCP sender can inject into the network:
   a) The sender congestion window
   b) The receiver advertised window
   c) The bottleneck bandwidth
   d) The connection round-trip time

15. TCP congestion control is one example of which class of algorithms:
   a) Additive increase, additive decrease
   b) Multiplicative increase, multiplicative decrease
   c) Additive increase, multiplicative decrease
   d) Multiplicative increase, additive decrease

16. Good round-trip time estimation is most important to:
   a) Avoid unnecessary retransmissions
   b) Maximize the achieved throughput
   c) Speed connection establishment
   d) Avoid unnecessary loss

17. Quality of Service guarantees cannot be made for a flow or user without:
   a) Mechanisms such as ECN that signal congestion without loss
   b) Traffic shaping algorithms that smooth bursty traffic
   c) Admission control mechanisms that limit load
   d) Mechanisms such as WFQ that improve fairness at routers

18. The key benefit of Random Early Detection is that:
   a) Congestion is detected and signaled before it occurs
   b) Packet loss is not used to signal congestion
   c) Larger bursts can be absorbed without loss
   d) Fairness is improved

19. Circle all that are true. The DNS is a hostname database that is:
   a) Distributed in terms of management
   b) Replicated to increase availability
   c) Cached to improve performance
   d) Consistent to increase availability

20. What is the primary reason that TCP connection establishment exchanges a different initial sequence number (ISN) between the two sides?
   a) To prevent packets from previous connections being confused with the new connection
   b) To provide mutual authentication
   c) To distinguish packets from other concurrent flows
   d) To protect against loss

21. In a public key cryptography system the secrecy of messages sent from A to B is achieved by:
    a) Encrypting the message at A with A's private key
    b) Encrypting the message at A with B's private key
    c) Encrypting the message at A with A's public key
    d) Encrypting the message at A with B's public key

22. Select the best answer below. Message digests are designed so that the digest value is:
    a) Provably unique
    b) Computationally intensive to compute
    c) Computationally infeasible to reverse
    d) Robust against random message errors

Sample Longer Questions

As well as multiple choice questions, the final will contain a smaller number of longer questions similar to your written homework questions. These Peterson questions give you a reasonable idea of what you will face.

1.6, 1.12

2.1, 2.3, 2.39, 2.44, 2.49

3.15

4.4, 4.6, 4.10, 4.13, 4.16, 4.23, 4.40

5.5, 5.8, 5.11, 5.18, 5.25, 5.37

6.9, 6.10, 6.14, 6.29, 6.31, 6.43, 6.45

8.8

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