9. Computer Networks

Starter Quiz ·

University Computer Science Name: _____ Score: _____

1. A 100-byte payload leaves with how many Ethernet+IP+TCP header bytes?

   ☐ 54

   ☐ 34

   ☐ 44

   ☐ 64

2. Crossing 3 routers, the destination IP –

   ☐ is dropped

   ☐ changes once

   ☐ stays fixed end to end

   ☐ changes each hop

3. Destination 10.1.2.200 with /8, /16 and /24 entries present goes to –

   ☐ the /16 next hop

   ☐ the /24 next hop

   ☐ the default

   ☐ the /8 next hop

4. The UDP header carries –

   ☐ sequence numbers

   ☐ three ACKs

   ☐ a window

   ☐ ports, length, checksum

5. DNS delegation means the root answers with –

   ☐ a referral to the TLD

   ☐ a cache only

   ☐ the final address

   ☐ an error

6. With p = 23 and g = 5, Alice picks a = 4. What value does she send?

7. A store keeps N = 7 replicas and writes to W = 4. What is the smallest R that guarantees a read sees the latest write?

   _____

8. How long does a 1500-byte packet take to transmit at 1 Gb/s, in microseconds?

   _____ µs

9. How many usable host addresses does a /27 subnet have?

   _____

10. Router X reaches Y at cost 3 and Z at cost 1. Y reports distance 4 to D; Z reports distance 8. What is X's distance to D?

    _____

9. Computer Networks

Answers ·

University Computer Science

1. **54**

   14 + 20 + 20 = 54: one header per layer crossed.

2. **stays fixed end to end**

   MAC names the neighbour and changes; IP names the stranger and never does.

3. **the /24 next hop**

   Longest prefix match: three match, the /24 is most specific.

4. **ports, length, checksum**

   8 bytes: two ports, a length, a checksum - the postcard.

5. **a referral to the TLD**

   Each level refers downward; the authoritative server holds the host record.

6. **4**

   5^4 = 625, and 625 mod 23 = 625 - 621 = 4.

7. **4**

   Need W + R > N: 4 + R > 7, so R = 4.

8. **12 µs**

   1500 x 8 = 12 000 bits, divided by 10^9 bit/s is 12 µs.

9. **30**

   2^(32-27) = 32 addresses, minus network and broadcast = 30.

10. **7**

    min(3 + 4, 1 + 8) = min(7, 9) = 7, via Y.