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. Integrity without confidentiality still –

   ☐ prevents neither

   ☐ prevents both

   ☐ prevents alteration

7. A timeout means –

   ☐ the work failed

   ☐ you do not know

   ☐ the clock broke

   ☐ the work succeeded

8. Ethernet could evolve under identical IP because –

   ☐ the link service interface held

   ☐ IP changed too

   ☐ browsers rewrote

   ☐ MACs grew

9. IHL = 5 means the header is –

   ☐ 20 bytes

   ☐ 10 bytes

   ☐ 5 bytes

   ☐ 40 bytes

10. On the course graph, node F settles at –

    ☐ 14

    ☐ 13

    ☐ 11

    ☐ 15

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. **prevents alteration**

   A MAC catches alteration; encryption catches reading - separate defenses.

7. **you do not know**

   The third outcome: the request may or may not have landed - retry idempotently.

8. **the link service interface held**

   The service (best-effort frames) never changed, so the layer above never noticed.

9. **20 bytes**

   IHL counts 32-bit words: 5 x 4 = 20 bytes.

10. **13**

    A C B D E F: 2 + 1 + 5 + 2 + 3 = 13 - via E beats D direct (14).