CSE204 Computer Networks
2017/2018 Spring – Final Exam

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Multiple Choice (Single Answer) Questions (50 pts, 5 points each)

Q1: Link layer packet is called _____.

a. segment b. data c. frame d. datagram e. none of above

Q2: Assume that we have a trace route output as shown below.

```
 1    <1 ms    <1 ms    <1 ms  server88-208-200-1.live-servers.net [88.208.200.1]
 2    <1 ms    <1 ms    <1 ms  88.208.255.101
 3     5 ms     5 ms     5 ms  88.208.255.62
 4     *        *        *     Request timed out.
 5     5 ms     5 ms     5 ms  209.85.252.76
 6    16 ms    25 ms    16 ms  209.85.251.190
 7    22 ms    16 ms    16 ms  209.85.253.125
 8    16 ms    25 ms    28 ms  216.239.47.26
 9    17 ms    17 ms    16 ms  dy-in-f99.1e100.net [209.85.143.99]
```

What is the IP address we are tracing?

a. `88.208.200.1` b. `dy-in-f99.1e100.net` c. `server88-208-200-1.live-servers.net`

d. `209.85.143.99` e. None of above

Q3: Consider previous question. Is there any packet loss and what is the minimum end-to-end delay?

a. No, <1 ms b. Yes, <1 ms c. yes, 5 ms d. Yes, 28 ms e. Yes, 16 ms

Q4: If an organisation using network address 223.1.17.192/28, how many interfaces can be supported?

a. 15 b. 28 c. 32 d. 4 e. None of above

Q5: Which one is **not** CSMA, CSMA/CD MAC protocol's mechanism (feature)?

a. Listen before transmit b. Collision detection

c. Binary backoff d. Channel partitioning

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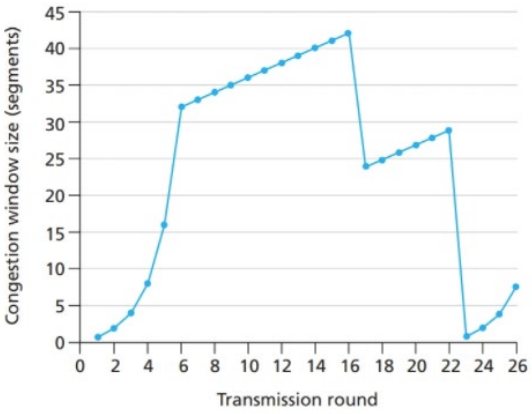
Q6: Please consider following figure (TCP Reno). What is the initial value of "ssthresh" at the first transmission round and what happening at interval [1, 6][23, 26]?



a. 16, full recovery b. 32, slowstart

c. 42, slowstart d. 42, Go-back-N

Q7: Which one is **not** true?

a. File transfer requires no data loss, elastic throughput and no time sensitivity.

b. E-mail application requires no data loss, elastic throughput and no time sensitivity.

c. Internet telephony requires some loss, elastic throughput and time sensitivity.

d. Stored video requires some loss, fixed throughput and no time sensitivity.

Q8: Assume that a NAT-enabled router (138.76.29.7) contains NAT translation table shown below and host (10.0.0.1) requests a web page from Google server. What destination address would appear on the datagram that NAT router received from Google server?

NAT translation table	
WAN side addr	LAN side addr
138.76.29.7, 5001	10.0.0.1, 3345

a. 10.0.0.1, 5001 b. 10.0.0.1, 3345

c. 138.76.29.7, 80 d. 138.76.29.7, 5001

Q9: The ability to inject packets into the Internet with a false source address (someone else is imitating you) is known as _____.

a. IP Spoofing b. DoS Attack c. Packet Sniffing d. Virus

ip sahtekarlığı

Q10: Suppose Host A wants to send a 2500Kbyte packet on a 10Gbps link what is the transmission delay (approximately) of the packet.

a. 2 sec b. 1.6 sec c. 32 sec d. 0.002 sec e. 16 sec

TD = L/R
TD = 2500 / 10
TD = 0.00025

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General Format Questions

Q11: (12 pts) Please perform Cyclic Redundancy Check (receiver side) calculation to determine whether error happened or not while frame transmission. Assume that sender and receiver agrees to use Generator (G): 10011 and receiver receives the message 10101010110100.

Q12: (12 pts) Explain each delay that comprised by nodal delay as shown in formula below and indicate time scale (i.e. microseconds, milliseconds) of each with reasons.

$d_{nodal} = d_{proc} + d_{queue} + d_{trans} + d_{prop}$

d_{proc} : Nodal processing delay that related to (i.e. router internal processing) packet header processing etc. typically measured in microsecond.

d_{queue} : Queuing delay, time takes a packet waits in the buffer (memory) for transmission, typically measured in millisecond.

d_{trans} : Transmission delay that is time required to transmit bits from buffer to communication medium, typically measured in millisecond.

d_{prop} : Propagation delay is a time takes a packet travels on the link from source to destination. This depends on the physical characteristics of the link. Typically measured in millisecond (e.g. ~2x108 m/sec).

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Q13: (26 pts) Mehmet attaches his laptop to campus network with wired connection, opens his browser and requests/receives a web page with using URL www.google.com. Please write/draw/explain all steps that Mehmet will go through to see google's web page in his browser (remember day in life scenario slides).

1. DHCP request
- connecting laptop needs to get its own IP address, addr of first-hop router, addr of DNS server by using DHCP
- Ethernet frame broadcast (dest: FFFFFFFFFFFF) on LAN, received at router running DHCP server
- DHCP server formulates DHCP ACK containing client's IP address, IP address of first-hop router for client, name & IP address of DNS server
- Client now has IP address, knows name & addr of DNS server, IP address of its first-hop router

2. DNS and ARP queries
From now on you can refer to "Lecture Slides-5" for rest of the steps and figures.

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