CSE204 Computer Networks
2016/2017 Spring - Midterm Exam

Name and Surname: Student Number:

Multiple Choice (Single Answer) Questions (48 pts, 4 points each)

Q1: Suppose Host A wants to send a large file to Host B. The path from Host A to Host B has three links, of rates R1 = 500 kbps, R2 = 2 Mbps, and R3 = 1 Mbps. Assuming no other traffic in the network.

What is the throughput for the file transfer?

a. 2 Mbps b. 1.16 Mbps c. 3.5 Mbps d. 500 kbps e. 1 Mbps

Q2: According to Q1 above - suppose the file is 4 million bytes. Dividing the file size by the 1 Mbps throughputs, roughly how long will it take to transfer the file to Host B?

a. 32 seconds b. 400 msec c. 40 seconds d. 64 seconds e. 32 msec

4million byt = 32000000 bits
500 kbps = 500000 bps
32000000 / 500000 =64sec

Q3: Which one is **not** true for web caching?

a. Reduce response time for client request.

b. Satisfy client request with involving origin server.

c. Reduce traffic on an institution's access link.

d. Local web cache reduces packet delay.

Q4: The header format for TCP is a minimum of _____ octets.

a. 16 b. 8 c. 20 d. 160 e. 4

Q5: Which one can be considered as a realtime application?

a. web documents b. audio/video c. file transfer

d. text messaging e. e-mail

Q6: Suppose you have the following 2 bytes: 01011100 and 01100101. What is the 1s complement of the sum of these 2 bytes for checksum?

a. 10011010 b. 10100011 c.11111111 d. 11101000 e. 00010111

Instructor: Asist. Prof. Dr. Hüseyin ABACI

CSE204 Computer Networks
2016/2017 Spring - Midterm Exam

Name and Surname: Student Number:

Q7: If an organisation using subnet mask a.b.c.d/23 how many host can be allocated within same subnet?

a. 23 b. 255 c. 511 d. 512 e. 256

Q8: If the TCP server were to support *n* simultaneous connections, each from a different client host, how many sockets would the TCP server need?

a. n b. 1 c. n-1 d. n+1 e. no socket needed

Q9: The purpose of the _____ mechanism is to gradually expand the window until acknowledgments are received.

a. slow start b. window management c. backpressure

d. fast recovery e. none of above

Q10: Which one is **not** true?

a. TCP provides a reliable byte-stream between client and server but UDP does not.

b. Nether TCP nor UDP guarantee that a certain value for throughput will be maintained.

c. Nether TCP nor UDP guarantee that data will be delivered within a specified amount of time.

d. Nether TCP nor UDP provide confidentiality (via encryption).

e. You would use TCP if you wanted to do a transaction as fast as possible.

Q11: Suppose an application generates chunks of 40 bytes of data every 20 msec, and each chunk gets encapsulated in a TCP segment and then an IP datagram. What percentage of each datagram will be overhead, and what percentage will be application data?

a. 100% b. 25% c. 50% d. 0% e. none of above

Q12: Which protocol allows user to organize messages in folders keeps user state across sessions.

a. IMAP b. POP3 c. SMTP d. HTTP

Instructor: Asist. Prof. Dr. Hüseyin ABACI

CSE204 Computer Networks
2016/2017 Spring - Midterm Exam

Name and Surname: Student Number:

General Format Questions

Q13: (10 pts) Please explain utilization, throughput, godput, packet drop, end-to-end delay.

Q14: (10 pts) Draw 3 TCP retransmission scenarios “lost ACK”, “premature timeout” and “cumulative ACK” (note: time should moves forward from the top of the diagram toward the bottom of the diagram).

CSE204 Computer Networks
2016/2017 Spring - Midterm Exam

Name and Surname: Student Number:

Q15: (10 pts) Draw 5 layers Internet protocol stack and explain functions of each layer briefly.

Instructor: Asist. Prof. Dr. Hüseyin ABACI

CSE204 Computer Networks
2016/2017 Spring - Midterm Exam

Name and Surname: Student Number:

Q16: (10 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.

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

CSE204 Computer Networks
2016/2017 Spring - Midterm Exam

Name and Surname: Student Number:

Q17: (16 pts) Draw a big picture of Inter-networks diagram that contains all components of network with their names. The diagram should contain edge (end-devices) devices, access networks and core networks.