Computer Networks II

Curso 16/17 :: Test 1

Escuela Superior de Informática

This exam consists of 14 question totalling 20 points. The maximum duration is 80 minutes. Three wrong answers substract a point. Only an answer if correct if otherwise not stated. Calculator use is forbidden. Write legibly using only the reserved area.

Apellidos: _____ Nombre: _____ Grupo: _____

1. [1p] What happens when a UDP client invokes `sendto()` to an incorrect address?

    ☐ **a**) The connection ends in error.

    ☐ **b**) A `ServerNotFound` exception is raised.

    ☐ **c**) Request forwarding.

    ☐ **d**) Nothing.

2. [1p] With Python, if invoking a socket in blocking mode, the return value of the `recv()` method returns an empty sequence, what it means?

    ☐ **a**) The sender sent nothing.

    ☐ **b**) The other peer closed the connection.

    ☐ **c**) The retransmission timer expired.

    ☐ **d**) The local process was interrupted by a signal.

3. [1p] A client has sent 200 bytes calling the `sendall()` method of a TCP socket. The server invokes the `recv()` method in a socket in the same connection. The received message on the server has a length of 150 bytes. Which is the reason?

    ☐ **a**) Being a connectionless there is no guarantee of delivery or order.

    ☐ **b**) It's a normal situation, since it is a stream oriented communication.

    ☐ **c**) The sent message was divided into segments and one of them is lost.

    ☐ **d**) The situation can never occur..

4. [1p] Select the FALSE statement in relation to the flow control mechanism:

    ☐ **a**) It prevents network congestion.

    ☐ **b**) It can be implemented at various layers of the TCP/IP stack.

    ☐ **c**) It occurs when there is an important difference between production and reception of data in a stream.

    ☐ **d**) It prevents the saturation of a slow receiver.

5. [1p] What TCP header fields are used for flow control?

    ☐ **a**) URG pointer.

    ☐ **b**) Offset.

    ☐ **c**) Flow tag.

    ☐ **d**) Window.

6. [1p] In what traffic profile the AVERAGE DATA RATE is equal to the PEAK DATA RATE?

    ☐ **a**) Constant bitrate

    ☐ **b**) Variable bitrate

    ☐ **c**) Average bitrate

    ☐ **d**) Burst

7. [1p] What the router do when a packet arrives and the input queue is full?

    ☐ **a**) That packet package is dropped

    ☐ **b**) It flushs the output queue

    ☐ **c**) The rest of the incoming packets are dropped

    ☐ **d**) None

8. [1p] What is the difference between **open loop** and **closed loop** congestion control?

    ☐ **a**) Open loop is applied to prevent congestion and closed one attempts to resolve congestion when it is already occurring.

    ☐ **b**) Closed loop is applied to prevent congestion and open one attempts to resolve congestion when it is already occurring.

    ☐ **c**) Open loop is continuously applied (although not required) and closed one is applied only when needed.

    ☐ **d**) Closed loop is applied continuously (although not required) and open one is applied only when needed.

9. [1p] Which of the following congestion techniques is *node-to-node*?

    ☐ **a**) Choke packet.

    ☐ **b**) Back pressure.

    ☐ **c**) Back pressure and choke packet.

    ☐ **d**) None of the above.

10. [1p] What is the maximum value that the congestion window could take during the Slow Start?

    ☐ **a**) Until some packet has to be resent.

    ☐ **b**) Until 3 equal ACKs are received.

    ☐ **c**) Up to the threshold.

    ☐ **d**) Up to 2^{16}.

11. [1p] When a router processes an incoming IP packet, how does it determine where to forward it?

    ☐ **a)** The route table and the source IP address

    ☐ **b)** The destination IP address and the source MAC

    ☐ **c)** The IP header and the source port

    ☐ **d)** The routing table and the destination IP address

12. [1p] Choose the correct statement regarding *packet switching*:

    ☐ **a)** All packages with the same identifier follow the same path.

    ☐ **b)** All packets belonging to the same flow are routed through the same virtual circuit.

    ☐ **c)** Each packet is routed independently to its destination.

    ☐ **d)** The end-to-end transfer rate is guaranteed.

13. [4p] The picture below shows the value of the congestion window (in bytes) for a TCP connection. Explain the reason of the value in each moment.
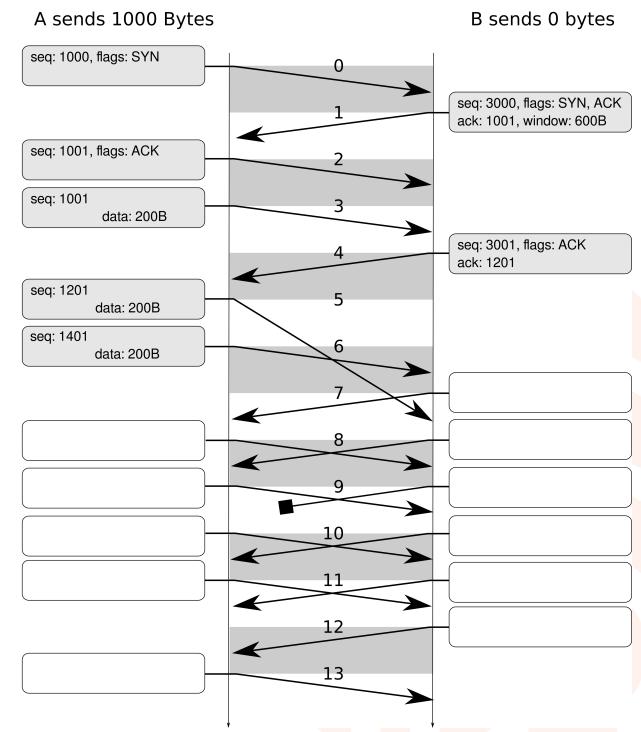
14. [4p] The figure shows a TCP flow, including connection and disconnection phases. Complete the blank segments considering:
   - A is using slow-start to prevent congestion.
   - Timeout for A segments is 3 clock ticks.
   - A uses a fixed data size of 200 bytes.
   - A is going to send data segments whenever it can.

A sends 1000 Bytes   B sends 0 bytes

seq: 1000, flags: SYN

0

seq: 3000, flags: SYN, ACK
ack: 1001, window: 600B

1

seq: 1001, flags: ACK

2

seq: 1001
data: 200B

3

seq: 3001, flags: ACK
ack: 1201

4

seq: 1201
data: 200B

5

seq: 1401
data: 200B

6

7

8

9

10

11

12

13