UCLM
UNIVERSIDAD DE CASTILLA-LA MANCHA

Computer Networks II

Curso 16/17 :: Test 1

Escuela Superior de Informática

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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.

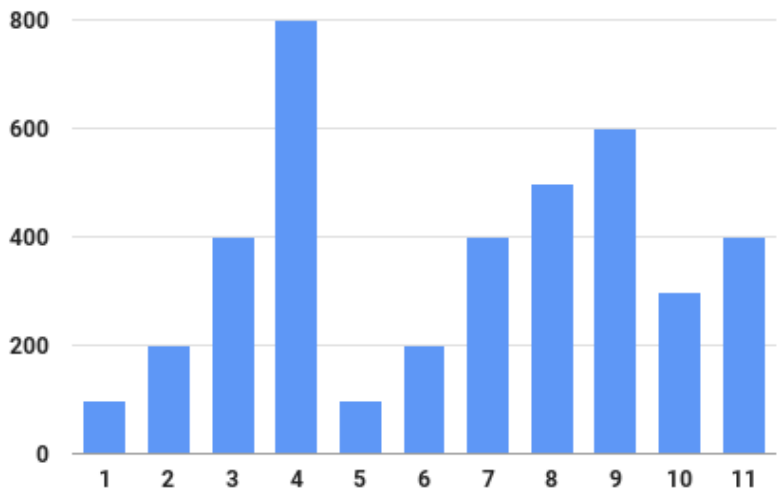
9. [1p] Which of the following congestion techniques is *node-to-node*?
   - ☐ **a)** Choke packet.
   - ☐ **b)** Back pressure.
   - ☐ **c)** Back pressure and choke packet.
   - ☐ **d)** None of the above.

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.