Computer Networks II
Test 1 (retake)

Escuela Superior de Informática

calificación

This test consists of 15 question totalling 15 points. The maximum duration is 25 minutes. Three wrong answers substract a point. Only an answer if correct if otherwise not stated. Calculator use is forbidden. Write legibly and similar to the size of the printed text using only the reserved space.

Apellidos: **SOLUCIÓN**   Nombre: _____   Grupo: _____

1. (1p) An user open a youtube video, he may notice that playback does not start after about 12 seconds. Once it started playing and after almost 2 minutes video stops and continues after another 8 seconds automatically. What is the reason for this behavior?
   - ☐ **a**) It is a trading tactic youtube.
   - ☐ **b**) Insufficient bandwidth.
   - ☐ **c**) The connection is high latency.
   - ■ **d**) The connection has a high jitter or there has been a drop in bandwidth.

2. (1p) In a multiplayer online shooter game, a player perceives that characters of the other players advance by hops, as if they teleport some meters every few seconds. What do you think is the most likely cause of this strange effect?
   - ☐ **a**) His video card is configured with a too high resolution.
   - ☐ **b**) One or more players have a too low latency.
   - ■ **c**) One or more players have an Internet high latency connection.
   - ☐ **d**) The game is using a transport protocol based on datagrams instead of one based on flows.

3. (1p) Select the TRUE statement regarding broadcast links:
   - ☐ **a**) It uses a set of intermediate devices.
   - ■ **b**) Usually they provide various addressing modes.
   - ☐ **c**) It uses a 'store-and-forward' system.
   - ☐ **d**) The IP protocol is a clear example of use of the broadcast links.

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 is the main cause of congestion in a datagram network?

   > Las redes de datagramas proporcionan un servicio «best-effort» lo que habitualmente también implica que intentan entregar cualquier nuevo paquete que entre en la red. Como no se evalúa si ese nuevo paquete (o flujo) sobrepasará la capacidad de la red, es fácil que aparezca congestión cuando haya picos de carga.

6. (1p) In a server using UDP port 3000, you want to restrict clients so only accept those running on the same computer. What sentence you should run?
   - ☐ **a**) `sock.bind(('0.0.0.0', 3000))`
   - ☐ **b**) `sock.bind(('', 3000))`
   - ■ **c**) `sock.bind(('127.0.0.1', 3000))`
   - ☐ **d**) `sock.local_only = True`

7. (1p) Given the next execution of a server written in Python, mark the correct statement:

```
~/upper# ./TCP_server.py 1000
Traceback (most recent call last):
  File "./TCP_server.py", line 36, in <module>
    sock.bind((ip, int(sys.argv[1])))
OSError: [Errno 98] Address already in use
```

  ☐ **a**) The variable `ip` contains an incorrect IP.

  ☐ **b**) A client has connected using the port 1000.

  ■ **c**) Some process has already bound the port 1000.

  ☐ **d**) Port 1000 is reserved and use it requires root permissions.

8. (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..

9. (1p) What is the return value of the method `recvfrom()`? what is the reason to provide that information each time it is invoked?

> El método `recvfrom` se utiliza con sockets de tipo datagrama. Al no existir conexión pueden llegar mensajes desde distintos orígenes. Para poder identificar dicho origen, el método devuelve su IP y puerto, además del mensaje propiamente dicho.

10. (1p) In a TCP server, the `listen()` system call parameter defines...

  ☐ **a**) Nothing, because `listen()` is only used in UDP servers.

  ☐ **b**) Nothing, because `listen()` is only used in TCP clients.

  ☐ **c**) The maximum period of time, in seconds, that the client will wait to be served before arising a failure.

  ■ **d**) The queue size of the waiting clients.

11. (1p) Although there are many different WAN technologies, what of the kinds below is the most common?

  ■ **a**) point to point links

  ☐ **b**) broadcast links

  ☐ **c**) stop and wait

  ☐ **d**) microwaves

12. (1p) In a lab, two routers are to be interconnected emulating a WAN network, without using neither a DSU/CSU nor a modem. What type of V.35 should be used?

  ■ **a**) DTE-DTE   ☐ **c**) DTE-DCE

  ☐ **b**) DCE-DCE   ☐ **d**) DCE-DTE-DCE

13. (1p) Explain some of the reasons why ATM uses so small PDUs.

> Una de las razones más importantes es que permite hacer una multiplexación homogénea de múltiples flujos, lo que lo hace muy adecuado cuando se necesita una tasa constantes.

14. (1p) Given the following Frame Relay switch and, using consecutive DLCI identifiers (starting by 1), please indicate the switching table that results from the following virtual circuits: B to A, C to A and C to B.
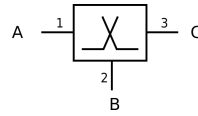
A possible solution:
src->dst | in-DLCI | out-DLCI
B->A | 2-1 | 1-1
C->A | 3-1 | 1-2
C->B | 3-2 | 2-2

15. (1p) In a large distance SONET path, with an ADM (add-drop) there are several interspersed R devices. Select the right choice:

☐ **a**) The R device amplifies and corrects errors.

■ **b**) The R device amplifies and regenerates the signal.

☐ **c**) The R device operates on the data link layer and corrects errors.

☐ **d**) The R device binds two line sections and corrects errors.