

This test consists of 8 question totalling 15 points. The maximum duration is 60 minutes. Two wrong answers subtract 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. (2p) Explain the main difference between a switch and a router.

The router main purpose is to interconnect different (in respect to addressing and perhaps to technology) networks (broadcast domains). The switch performs frame switching and segmentation (depending on type) within the same network.

2. (2p) A packet switching network may increase the jitter of a message flow. Where are the packets stored during the additional time?

- ☒ a) At the router queues. ☐ c) At the routing tables in routers.
☐ b) At the switching tables in switches. ☐ d) Packet switching networks do not suffer of jitter.

3. (2p) In what context a neighbor discovery mechanism is often required?

- ☐ a) WAN with serial links. ☐ c) Whenever the IP or TCP protocol is used.
☒ b) LAN with shared medium. ☐ d) Whenever a hierarchical logical addressing is used.

4. (2p) What characterizes a connectionless service?

- ☒ a) The sender does not verify that the recipient is there before transmitting.
☐ b) Communication begins after a negotiation process between source and destination.
☐ c) Usually the reliable protocols offer it.
☐ d) TCP offer that service.

5. (2p) Which of the following code fragments is the most similar to a basic web client?

```
1 // A)
2 s = socket(AF_INET, SOCK_STREAM)
3 s.sendto('GET /index.html HTTP/1.0\n\n', ('www.example.net', 80))
4 s.recvfrom(32)
```

```
1 // B)
2 s = socket(AF_INET, SOCK_DGRAM)
3 s.connect('http://www.google.com')
4 s.recvfrom('GET /index.html HTTP/1.0\n\n', 80)
```

```
1 // C)
2 s = socket()
3 s.connect(('1.2.3.4', 2000))
4 s.send('GET / HTTP/1.0\n\n')
5 s.recv(32)
```

- ☐ a) ☒ c)
☐ b)

6. (2p) What is the return value of method `socket.recvfrom()`?

- ☐ a) It returns nothing unless disconnection happens.
☐ b) The entire IP packet and its size in bytes.
☐ c) The total number of bytes that have been read.
☒ d) The payload and the endpoint of the sender (address and port).

7. (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. ☐ c) The retransmission timer expired.
- ☒ b) The other peer closed the connection. ☐ d) The local process was interrupted by a signal.
8. (2p) What protocol is typically used to encapsulate the IP traffic on WAN connections provided by ISPs for home users?
- ☒ a) PPP ☐ c) HTTP
- ☐ b) TCP ☐ d) VPN