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L3 Telecom | Exam Duration: 90 min

RIL EXAM (solution)

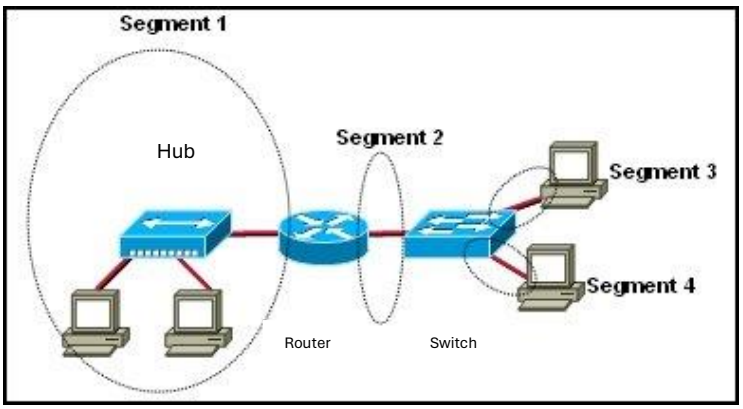
Ex01: (7pts)

Select the correct answer for the following questions (only one answer is valid):

1. A data communication system within a building or campus is called:
   - ✓ **LAN**
   - ☐ WAN
   - ☐ MAN
   - ☐ PAN
2. WAN stands for:
   - ☐ World area network
   - ✓ Wide area network
   - ☐ Web area network
   - ☐ Web access network
3. OSI stands for:
   - ✓ Open System Interconnection
   - ☐ Operating System Interface
   - ☐ Optical Service Implementation
   - ☐ Open Service Internet
4. The TCP/IP model does not have the _____ layer, but the OSI model has this layer.
   - ✓ Session
   - ☐ Transport
   - ☐ Application
   - ☐ Network
5. The transmission rate is decided by:
   - ☐ Network layer
   - ✓ Physical layer
   - ☐ Data link layer
   - ☐ Transport layer
6. Which address is used on the Internet to use TCP/IP protocols?
   - ☐ Physical address
   - ☐ Logical address
   - ☐ Port address
   - ✓ All the mentioned addresses
   - ☐ None of these answers
7. Which address is used to identify a process on a host by the transport layer?
   - ☐ Physical address
   - ☐ Logical address
   - ✓ Port address
   - ☐ Specific address

Exo2: (4pts)

Refer to the network presented in the scheme below and reply to the following questions:



1. How many **collision domains** are present in the network? 4
2. How many **broadcast domains** are present in the network? 2
3. Which segments in the network can support **fullduplex** transmission? 2, 3 and 4
4. If one of the computers which are directly connected to the hub send a frame, which devices in the network will receive it ? all computers, the router and the switch.

Ex03: (9pts)

You have been given the network 192.168.25.0/24. Your task is to divide this network into 4 equal-sized subnets.

1. Calculate the new prefix for dividing the network into 4 equal-sized subnets.
2. Define the **subnet mask** in both **binary** and **decimal** formats.
3. Identify **the network** and **broadcast addresses** for the first and second subnets.
4. Determine the number of usable IP addresses available in each of these subnets.
5. Assume you want to assign **the first usable IP address** from **the second subnet** to a server and the **last usable IP address** from **the first subnet** to a network printer. Identify these specific IP addresses.
6. What is the correct abbreviation for the IPv6 address :

   2001:0db8:0000:0000:0000:ff00:0042:8329

7. Determine the IPv6 prefix for the following host address:

   2001:95c0:ef01:0000:0000:03fd:ef01:0345/62

Solution:

1. New prefix: /26 (1 pt)
2. Subnet mask: (1 pt)
   - Binary: 11111111.11111111.11111111.11000000
   - Decimal: 255.255.255.192

3. Network and broadcast addresses: (2 pt)
   - First subnet: 192.168.25.0 (Network), 192.168.25.63 (Broadcast)
   - Second subnet: 192.168.25.64 (Network), 192.168.25.127 (Broadcast)

4. Usable IP addresses: 62 (1 pt)

5. Specific IP addresses: (2 pt)
   - Server (first usable IP in second subnet): 192.168.25.65
   - Printer (last usable IP in first subnet): 192.168.25.62

6. Abbreviated IPv6 address: 2001:db8::ff00:42:8329 (1 pt)
7. IPv6 prefix for the given address: 2001:95c0:ef01::/62 (1 pt)