Self-assessment test 2

Computer networks

1. Which of the following cannot be shared through a computer network?
    a. Printer
    b. Scanner
    c. Audio file
    d. Mouse
    e. Database
    f. Keyboard
    g. Data storage
    h. Presentation file
    i. Connection to the Internet
2. What are the elements of a simple network consisting of two computers? Which of them can be considered as hardware and which as software?
3. What is the medium in a wireless connection?
4. What kind of medium is considered as wired medium?
5. Write the full name for the following networking acronyms.
    a. LAN
    b. MAN
    c. WAN
    d. NIC
    e. MAC address
6. Which hardware is used to connect the computing device to the network?
7. What is the name of the prevalent technology for local area networks?
8. What is MAC address? Is it associated with a particular device or with the NIC?
9. Which of the following can be a MAC addresses?
    a. 00-2A-45-3B-7F-1C
    b. 00-2G-AB-22-00-1D
    c. 123.23.5.0
    d. 23.2A.45.5D.2G.67
10. What is the name for the standard of Ethernet technology?
11. What is the meaning of the acronym CSMA CD?
12. How does the protocol CSMA CD operate?
13. Can CSMA CD be used in Wireless Ethernet? Why or why not?
14. Explain how does the protocol CSMA CA operate?
15. What kind of media can be used for Ethernet technology?
16. Define what is repeater, hub, switch, bridge?
17. Multicast mode is one way of communication according to the direction of communication. How would you describe it?

18. Give two examples of asynchronous communication.
19. Give a definition for the following networking terms.
    a. Topology of a network
    b. Local area network
    c. Metropolitan area network
    d. Wide area network
    e. Protocol
    f. Ethernet
    g. Repeater
    h. Hub
    i. Switch

Packet vs. Circuit switching

1. What is a packet?
2. Which are the two main reasons for using packets instead of messages?
3. What is the main task of the routers in a packet switched network?
4. Describe the difference between circuit and packet switching (old telephone network and the Internet)? Which is more efficient in using the bandwidth? Which one is more expensive?
5. What is the predominant type of switching on the Internet?
6. What type of switching paradigm is used by old telephone network?
7. Why packet switching is more appropriate for computer traffic?
8. Can packets from a single message arrive at the destination at different order than the order in which they were sent? Is that a problem for the receiver? Is it necessary the packets to be placed in order?

The Internet, TCP/IP protocol stack

1. What is the vague definition of the Internet?
2. Which protocol stack is used on the Internet?
3. At which layer in the protocol stack is Internet protocol?
4. At which layer at the protocol is Transmission Control Protocol?
5. Write the full name for the following networking acronyms? Describe what the meaning once you resolve the full name.
    a. RFC
    b. TCP
    c. UDP
    d. IP
    e. DNS
    f. ARP
    g. DHCP
    h. ICMP
    i. RTT

   j. TTL
   k. IAB
   l. ISOC
   m. ICANN
   n. IETF
6. In the client-server architecture, which one starts the communication, the client or the server?
7. How many bits are there in IPv4 addresses?
8. What is the maximum decimal number which can appear in IPv4 address? Why?
9. What is subnet mask?
10. Give the prefix notation for the IP address 192.168.196 mask 255.255.255.192.
11. What is the subnet mask for the following prefix notation: 192.168.0.243/28?
12. Give a definition for the following terms.
    a. IPv4 address
    b. Subnet mask
    c. IPv6 address
    d. Network address translation
    e. Private IP addresses
    f. Public IP address
    g. Internet exchange
    h. Domain name system
    i. Address resolution protocol
    j. Routing protocol
13. What is the main function of a router?
14. Are the routers plug-and-play devices or they needed to be configured?
15. Why IP is called unreliable protocol?
16. Which address is resolved with ARP?
17. What is the main task DHCP performs?
18. What can be obtained with the ping and trace route programs?
19. What kinds of delay (latency) is introduced by each communication link (between two ends)?
20. What is propagation delay?
21. What is transmission delay?
22. What is queuing delay?
23. What is nodal or processing delay?
24. What is the difference between TCP and UDP?
25. What are ports? Do you know at least one of the well-known ports?
26. What is a root server?
27. List at least five top level domains.
28. Describe how your computer resolves the name you write in the browser into IP address?
29. Find out which is your closest DNS server (the name of the machine and the IP address)?
30. Find the IP address v4 and the subnet mask of your machine?
31. What are the different types of connections offered by ISPs?

32. What are the benefits when two ISPs establish peering?
33. Why establishing IXP points are beneficial for better functioning of the Internet?