**Computer networks**

**1**. When can a DHCP server relay IP addresses to clients on a network segment separated from

the server's location?

a) DHCP server can only relay IP addresses to the clients found on the same network segment

**b)** when the router separating them acts as a relay agent

c) when the dhcp server uses the same IP address as the router that supports the network

segment where the clients are located

d)when there are more logical routes between the dhcp server and the subnetwork clients

**Explanation**: pag 346 book / 373 pdf:

DHCP is a client-server protocol. A client is typically a newly arriving host wanting to obtain network configuration information, including an IP address for itself. In the simplest case, each subnet (in the addressing sense of Figure 4.17) will have a DHCP server. **If no server is present on the subnet, a DHCP relay agent (typically a router) that knows the address of a DHCP server for that network is needed.**

Read more: <https://www.geeksforgeeks.org/dhcp-relay-agent-in-computer-network/>

**2**.Choose the correct use of the Straight through and the Cross over cable

a) cross cable to connect a PC to a PC and straight through to connect a switch to a hub

b) cross cable to connect a router to a PC and straight through to connect a switch to a server

**c) cross cable to connect a switch to a hub and straight through to connect a router to a switch**

d) cross cable to connect a switch to a switch and straight through to connect a hub to a switch

**Explanation:**

Typically, Ethernet cables are **used to provide an internet connection, connect devices to a local network**. They plug into Ethernet ports on a variety of devices. The most common use for an Ethernet cable is connecting a WiFi router or modem to the internet entry port or telephone line.

When you connect two devices of different types together, you use a straight through cable. When you connect two devices of the same type together, you use a crossover cable

Group 1: Router(layer 3), Host, Server  
Group 2: Hub(layer 1), Switch(layer 2)  
If you are connection one device in Group 1 to one device in Group 2: use straight-through cable. i.e Router to Hub or Switch  
  
Two devices in the same group: use crossover cable. i.e

**3**.Choose the correct use of the following cables :

a) straight through to connect a hub to a switch or a hub to a PC

b) cross cable to connect a PC to a server or a PC to a router

c) straight through to connect a PC to a PC or a switch to a router

**d) cross cable to connect a router to a router or a hub to a switch**

**4**.In what situation is a PC unable to ping another PC ?

a) PCs are on two different network segments on the same network

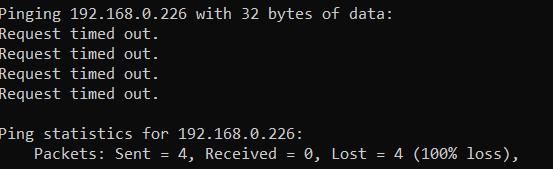
b) firewall is disabled on both of the PCs

c) one of the PCs is connected to the router by cross over cable

d) firewall is enabled on both computers

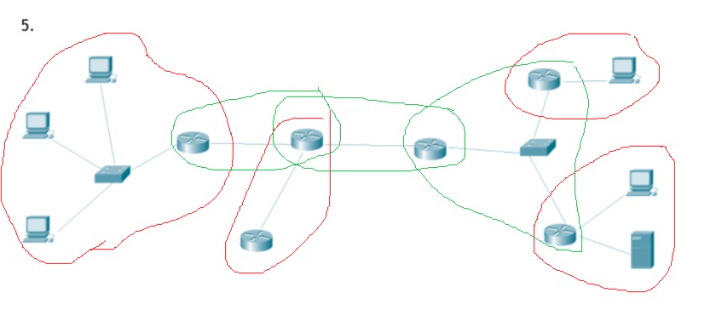
**Explanation:**

A **firewall** is a [**network security**](https://www.forcepoint.com/cyber-edu/network-security) device that monitors incoming and outgoing network traffic and permits or blocks data [**packets**](https://www.forcepoint.com/cyber-edu/packet-loss) based on a set of security rules. Its purpose is to establish a barrier between your internal network and incoming traffic from external sources (such as the internet) in order to block malicious traffic like viruses and hackers.



Cand iulia m-a pinguit(aveam firewall oprit) i-a mers sa trimita, dar cand eu i-am trimis, pachetele s-au pierdut(imaginea de sus).

A **ping** (Packet Internet or Inter-Network Groper) is a basic Internet program that allows a user to test and verify if a particular destination IP address exists and can accept requests in computer network administration.



**5**. Determine how many subnets are found in the above given network :

**a) 7**

b) 9

c) 5

d) 11

**6**. Which of the following is not a characteristic of the IP protocol?

a) It affects packet routing

b) Is considered an unreliable protocol

c) Is a connection-oriented protocol

d) It defines the Internet addressing system

**Explanation:**

Read more: <https://coggle.it/diagram/YGUZaQSlHUiAzzyo/t/characteristic-of-ip-protocol>

a) because of fragmentation

b) it does not guarantee that all packets that are sent will be received => unreliable

d) An IP address is a unique address that identifies a device on the internet or a local network. IP stands for "Internet Protocol," which is the set of rules governing the format of data sent via the internet or local network

c) is WRONG because it’t conectionless. TCP deals with that if you want to opt for it.

**7**. Having more than one DHCP server on the same subnet of a network is :

a) possible , if all server besides one are offline , so that the client requests for IP addresses only

reach that server

b) possible, as long as they share the same address pool to give to the clients

c) possible only if each of them has a different pool of addresses, without sharing any address

d) not possible

**Explanation:**

DHCP on a simple network works using the DORA principle. When the devices on your network first request an IP address or reach the end of their leases (or you force them to check their lease is still valid) they will simply broadcast a request for a DHCP server, and will accept an offer from **the first DHCP server to reply**. This is important to remember as we look at the options for multiple DHCP servers below.

DHCP servers that are serving the same subnet should not have a single “shared” scope, but rather they should have a “split” scope. In other words, if you have a range of DHCP addresses to issue to clients from 192.168.1.100 to 192.168.1.200, then both servers should be configured to serve separate parts of that range, so the first server might use parts of that scope from 192.168.1.100 to 192.168.1.150 and the second server would then issue 192.168.1.151 to 192.168.1.200.

Read more: https://serverfault.com/questions/368512/can-i-have-multiple-dhcp-servers-on-one-network

**8**.What is the main function of DNS?

a) maps a known IP address to a MAC layer address

b) provides host names to TCP/IP address resolution

c) automatically assigns IP addresses to the devices across the network

d) provides network connectivity to a computer

**Explanation:**

a) this is for ARP, not dns

c) this is for DHCP

d) this is for router

**9**. Gateways are used for:

a) providing connectivity between two or more network segments

b) providing network connectivity to a computer

c) tracing the route taken by data from the router to the destination network

d) transfer files between different platforms

**Explanation:**

b) a router does this. a router can also be a gateway, but a gateway isn’t just a router.

c) this is traceroute (<https://www.thousandeyes.com/learning/glossary/traceroute>)

d) this is FTP (File Transfer Protocol) (https://en.wikipedia.org/wiki/File\_Transfer\_Protocol)

Read more:

<https://whatismyipaddress.com/gateway>

<https://www.tutorialspoint.com/what-are-gateways-in-computer-network>

**10**. What is the maximum number of hosts for a class C network ?

a) 65.534

b) 65.535

c) 128

d) 254

**Explanation:**

https://github.com/AliceHincu/Theory-Concepts/blob/main/IP%20Addressing.md

**11**.What is the maximum number of networks in a class A network ?

a)126

b)128

c)16,384

d)254

**Explanation:**

https://github.com/AliceHincu/Theory-Concepts/blob/main/IP%20Addressing.md

**12**.Which one of the following addresses is a public IP address ?

a) 10.0.0.0/8

b) 207.46.130.0/24

c) 172.16.0.0/12

**d) 1.0.0.0/8**

**Explanation:**

Address ranges to be use by private networks are:

Class A: 10.0.0.0 to 10.255.255.255 (10.0.0.0/8)

Class B: 172.16.0.0 to 172.31.255.255 (172.16.0.0/12)

Class C: 192.168.0.0 to 192.168.255.255 (192.168.0.0/16)

**13**. NAT is :

a) a connection between computers and other network devices that are located within a small

physical location

b) a protocol providing a way for multiple computers on a common network to share single

connection to the Internet

c) a protocol used by routers to send data from one network to another

d) a set of protocol layers designed to make data exchange possible on different types of

computer networks

**Explanation:**

Go to NAT: https://github.com/AliceHincu/Theory-Concepts/blob/main/IP%20Datagram.md

a) this is LAN

c) this is routing protocol (ex: Routing Information Protocol (RIP))

d) OSI Model

**14**.Which one is not true about classless routing protocols :

a) RIPv1 supports classless routing protocols

b) RIPv2 supports classless routing protocols

c) It is allowed to a use a variable length mask

d) It is allowed to use discontiguous network

**Explanation:**

All three versions of RIP fall under the category of “distance vector protocols”. Distance vector protocols (a vector contains both distance and direction), such as RIP, determine the path to remote networks using hop count as the metric. A hop count is defined as the number of times a packet needs to pass through a router to reach a remote destination

a) RIP v1 uses what is known classful routing.

b) RIP v2 is a classless protocol and it supports classful.

c) VLSM is supported by the following protocols: Open Shortest Path First (OSPF), Enhanced Interior Gateway Router Protocol (EIGRP), Border Gateway Protocol (BGP), **Routing Information Protocol (RIP)** version 2 and 3 etc.

d) Classful routing means that all hosts in the internetwork use the same mask. Classless routing means that you can use Variable Length Subnet Masks (VLSMs) and can also support discontiguous networking. A discontiguous network is a network in which packets sent between at least one subnet must pass through subnets of a different network.

Read more: <https://www.geeksforgeeks.org/differences-between-ripv1-and-ripv2/>

<https://www.geeksforgeeks.org/routing-interface-protocol-rip-v1-v2/>

**15**.Which one of these is a RIPv2 characteristic ?

a)maintains a routing table as in RIPv1 without the mask information

b)is a classful routing protocol

c)supports maximum metric(hop count ) value up to 15 . Any router further than 15 hops is

considered unreachable

d)does not support triggered updates or authentication of ripv2 update messages

a) „RIPv2 send subnet mask to routing table.”

b) is a **classless** but support classfull

c) „Its hop count limit is 15.”

d) „RIPv2 provides trigger updates.”, ” It support for authentications.

**16**.Which one is true about RIPv1?

a) It is easier to configure than RIPv2

b) It maintains a routing table as in RIPv2 , including mask information

c) It has a lower administrative distance than RIPv2

d) It has the same timers ad RIPv2

**Explanation:**

a) it’s not easier since

b) „RIPV1 not send subnet mask to routing table.”

c) RIP has a default administrative distance of 120.

d) RIPv2 is pretty much just like RIPv1. It has the same administrative distance and timers and is configured just like RIPv1.

Read more: <https://www.flackbox.com/cisco-administrative-distance>

<https://www.ciscopress.com/articles/article.asp?p=102174&seqNum=4>

„RIPv2 timers are the same as in Version 1. They send periodic updates every 30 seconds. The default invalid timer is 180 seconds, the holddown timer is 180 seconds, and the flush timer is 240 seconds. You can write this list as 30/180/180/240 representing the U/I/H/F timers.”

**17**.An IP address is :

a)64 bits

b)32 bytes

c)128 bytes

d)32 bits

**18**.Which of the following are valid IP addresses to mark a sub network ?

a) 177.91.107.144/29

b)177.91.107.0/32

c) 177.91.107.1/25

d)177.91.154/30

a) 10110001.01011011.01101011.10010*000* valid mask, valid ip

b) not a valid mask

c) CIDR rules broken

d) no 32 bits, just 24.

**19**.What is the range of network IPs in which the following given IP resides :194.168.19.65/28 ?

a)194.168.19.64 – 194.168.19.87

b)194.168.19.64 – 194.168.19.79

c)194.167.19.62 – 194 .167.19.87

d)194.168.19.0 - 194.168.19.64

The mask is .28 => the last 4 bits are 0 => 2^4 = 16 ip adresses.

194.168.19.65 AND

255.255.255.240

= = = = = = = = =

194.169.19.64 = network adress. My size is 16. => broadcast adress is 194.169.19.79

So, the range is 194.169.19.64 - 194.169.19.79

**20**.Which of the following is the correct host range for the subnet in which we can find the IP

address 192.168.168.188 255.255.255.192 ?

a) 192.168.168.129-191

b) 192.168.168.128-190

c) 192.168.168.128-192

d) 192.168.168.129-190

192 = 1100 0000 => 6 zeros => 2^6 = 64 ip adresses.

192.168.168.188 AND

255.255.255.192

= = = = = = = = =

192.168.168.128 network address + 63 = .191

188 = 1011 1100

192 = 1100 0000 => AND = 10000000-> 128

The range is .128- .191, but it says HOST range, so we need to remove he broadcast and the network address, so the HOST RANGE is .129-.190

**21**.Which protocol does DHCP use at the Transport Layer ?

a)IP

b)UDP

c)TCP

d)ARP

**Explanation:**

a) IP stands for "Internet Protocol," which is the set of rules governing the format of data sent via the internet or local network

b) + c) DHCP cannot use TCP as the transport protocol because TCP requires both end-points to have unique IP addresses. At the time a host is required to use DHCP, it does not have an IP address it can source the packets from, nor does it have the IP address of the DHCP server. So it uses 0.0.0.0 as the source IP address and 255.255.255.255 (broadcast) as the destination IP address

d) maps a known IP address to a MAC layer address

**22**. Which class of IP address has the most host addresses available by default?

a)A

b)B

c)C

d)A and C

**Explanation:**

A has 2^24 – 2 hosts, B has 2^16 – 2 hosts, C has 2^8 – 2 hosts

**23**. Which protocol does Ping use?

a) TCP

b) ARP

c) ICMP

d) IP

**Explanation:**

ICMP is used by network devices, including routers, to send error messages and operational information indicating success or failure when communicating with another IP address, for example, when an error is indicated when a requested service is not available or that a host or router could not be reached.

Ping operates by sending Internet Control Message Protocol (ICMP) echo request packets to the target host and waiting for an ICMP echo reply. The program reports errors, packet loss, and a statistical summary of the results, typically including the minimum, maximum, the mean round-trip times, and standard deviation of the mean.

**24**. Which of the following does not use TCP?

a) HTTP

b) DHCP

c) FTP

d) SMTP

**Explanation:**

a) As a request-response protocol, HTTP gives users a way to interact with web resources such as HTML files by transmitting hypertext messages between clients and servers. HTTP clients generally use Transmission Control Protocol (TCP) connections to communicate with servers.

b) see question 21

c) FTP sends data over a TCP/IP connection

d) The Simple Mail Transfer Protocol (SMTP) is an internet standard communication protocol for electronic mail transmission. SMTP servers commonly use the Transmission Control Protocol on port number 25 (for plaintext) and 587 (for encrypted communications).

**25**.Which of the following is a private IP address ?

a) 12.0.0.2

b) 168.172.19.40

c) 172.15.14.36

d) 192.168.24.43

**Explanation:**

Address ranges to be use by private networks are:

Class A: 10.0.0.0 to 10.255.255.255

Class B: 172.16.0.0 to 172.31.255.255

Class C: 192.168.0.0 to 192.168.255.255

**26**. Which class of IP address provides a maximum of only 254 host addresses per network ID?

a)class A

b)class B

c) class C

d) class B and C

<https://github.com/AliceHincu/Theory-Concepts/blob/main/IP%20Addressing.md>

**27**.Which one is true about ICMP packets ?

a) They are encapsulated within IP datagrams.

b) ICMP is encapsulated within UDP datagrams.

c) They do not provide hosts with information about network problems.

d) They guarantee datagram delivery.

**Explanation:**

a) ICMP(Internet Control Message Protocol) is actually a user of the IP protocol--in other words, ICMP messages must be encapsulated within IP packets.

b) it’s not true because of a)

c) „The primary purpose of ICMP is for error reporting”, „A secondary use of ICMP protocol is to perform network diagnostics”

d) IP does not guarantee that all packets that are sent will be received, and because ICMP is a user of the IP protocol => it also does not guarantee datagram delivery

**28**. Which of the following is considered to be the destination host before translation?

a) Inside local host

b) Outside local host

c) Inside global host

d) Outside global host

<https://www.geeksforgeeks.org/network-address-translation-nat/>

**29**. Which of the following is considered to be the address after translation?

a) Inside local host

b) Outside local host

c) Inside global host

d) Outside global host

**30**.Which of the following is not a way to configure NAT ?

a)IP NAT pool

b)Static

c)Dynamic

d)NAT overload

**Explanation:**

There are 3 ways to configure NAT:

Static NAT – In this, a single unregistered (Private) IP address is mapped with a legally registered (Public) IP address i.e one-to-one mapping between local and global addresses. This is generally used for Web hosting.

Dynamic NAT – In this type of NAT, an unregistered IP address is translated into a registered (Public) IP address from a pool of public IP addresses. If the IP address of the pool is not free, then the packet will be dropped as only a fixed number of private IP addresses can be translated to public addresses.

Port Address Translation (PAT) – This is also known as NAT overload. In this, many local (private) IP addresses can be translated to a single registered IP address. Port numbers are used to distinguish the traffic i.e., which traffic belongs to which IP address. This is most frequently used as it is cost-effective as thousands of users can be connected to the Internet by using only one real global (public) IP address.

**31**.Which one of the following is not an advantage of using NAT?

a) Conserves legally registered addresses.

b) Translation introduces switching path delays

c) Increases flexibility when connecting to the Internet

d) Reduces address overlap occurrence

<https://www.geeksforgeeks.org/network-address-translation-nat/>

<https://www.geeksforgeeks.org/advantages-and-disadvantages-of-nat/>

**32**.Which one is true about NAT ?

a) Causes loss of end-to-end IP traceability

b) Does not conserve legally registered addresses

c) Decreases flexibility when connecting to the Internet and certain applications will not function with NAT enabled

d)Increases address overlap occurrence

**33**. Which of the following is true about the IP address 10.16.3.65/23?

a) The subnet address is 10.16.3.0 255.255.254.0

b) The last valid host address in the subnet is 10.16.2.254 255.255.254.0

c) The broadcast address of the subnet is 10.16.3.0 255.255.254.0

d) The lowest host address in the subnet is 10.16.2.1 255.255.254.0

**Explanation:**

/23 => 32-23=9 => 2^9 zeros

10.16.3.65 AND

255.255.254.0

= = = = = = =

10.16.2.0 is the network adress + 512ips => 10.16.4.0 is the broadcast

range of hosts: 10.16.2.1 – 10.16.3.255

**34**.Which of the following are valid subnet addresses ?

a)177.91.107.0 ,177.92.107.97, 177.92.107.144

b)177.91.107.0 , 1.0.0.0 , 0.0.0.0

c)191.91.168.1 , 177.91.107.152, 177.91.168.127

d)177.91.107.0 , 177.91.107.144, 1.0.0.112

**Explanation:**

CIDR: „the network adress must be divisible by the number of adresses in the block ” and we know that the addresses in the block is a power of 2.

a) can’t be, because .97 is an odd number so it can’t be divisible with 2.

b) can’t be, becaue 0.0.0.0 is not valid

c) .127 is odd

d) is even + valid

**35**. What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?

a)14

b)15

c)16

d)30

**Explanation:**

224 = 11100000 => 2^5 available ips – 2(NA, BA) = 32-2 = 30

**36**.What does a mask /28 mean?

a) the maximum number of IP addresses that can be assigned to hosts is 16

b) the maximum number of IP addresses that can be assigned to hosts is 14

c) the maximum number of IP addresses that can be assigned to hosts is 8

d) the maximum number of IP addresses that can be assigned to hosts is 30

**Explanation:**

2^(32-28) = 2^4 = 16 ips. Subtract 2 because NA and BA => 14 hosts

**37**.A submask /30 can be given to :

a) a subnet with 3 PC’s, connected to a router by a switch

b) a subnet with 2 PC’s and a Server , connected to a router by a switch

c) a subnet with 2 PC’s connected directly to the router

d) a subnet with 2 routers connected

**Explanation:**

/30 => 2^2 = 4 ips...-2(NA, BA) = 2ips. => we only have space for 2 routers

**38**. You need to subnet a network that has 7 subnets, each with at least 16 hosts. Which classful subnet mask would you use?

a) 255.255.255.192

b) 255.255.255.224

c) 255.255.255.240

d) 255.255.255.252

**Explanation:**

224 = 1110 0000 => 2^3 = 8 subnets and 2^5 = 32 ips, 30hosts

**39**. You have an interface on a router with the IP address of 192.168.192.10/29. Including the router interface, how many hosts can have IP addresses on the LAN attached to the router interface?

a) 6

b) 7

c) 8

d) 14

**Explanation:**

2^(32-29) = 2^3 = 8. Nr hosts: 8-2(NA, BA) = 6

**40**. The network address of 172.16.0.0/19 provides how many subnets and hosts?

a) 7 subnets, 30 hosts each

**b) 8 subnets, 8,190 hosts each**

c) 8 subnets, 2,046 hosts each

d) 7 subnets, 2,046 hosts each

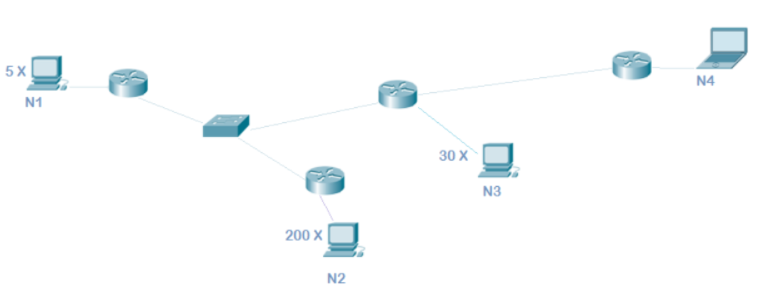
/19 = 255.255.224.0

.224.0 => 0111 0000. 0000 0000

3bits of 1 => 2^3 = 8 subnets

13 bits of 0 => 2^13 – 2 = 8190 assignable hosts

**41**.



Given the network above , choose which of the next are correct IP addresses for each subnet in the picture (N1,N2,N3,N4):

a)N1 -> 1.168.19.72/30 , N2->1.168.19.0/24, N3 ->1.168.19.84/26 , N4->1.168.19.80/30

**b)N1-> 1.168.19.72/29 , N2->1.168.18.0/24 , N3->1.168.19.0/26, N4->1.168.19.80/30**

c)N1-> 1.168.19.72/29 , N2->1.168.18.0/26 , N3->1.168.19.0/26 ,N4->1.168.19.80/30

d)N1-> 1.168.19.72/29 , N2->1.168.18.0/24 , N3 ->1.168.18.144/26 , N4 ->1.168.19.80/30

N2: 200pc+1router+2 =203 < 256ips = 2^8

=> range: x.0-x.255 / 255.255.255.0 = 24 (so c) is out)

=> range: 1.168.18.0 – 1.168.18.255 with mask /24

N3: 30pc+1router+2 = 33 < 64ips = 2^6

=> range: 1.168.19.0-1.168.19.63 with mask /26 (so d) and a) are out )

Prin eliminare => b e corect

**42**. Which of the following affirmations about UDP is not true ?

a. Writes packets of bytes

b. No read bytes from a packet are lost

c. Neither party can overflow the other. Traffic is controlled by the OS

d. Not read bytes from a packet are lost

a. Writes packets of bytes -> it s true cause sockets

c. Flow: one party can overflow the other =>lost packets ! No control !

b. No read bytes from a packet are lost -> „Niciun byte citit nu e pierdut”

d. Not read bytes from a packet are lost -> „Bytes care nu sunt cititi, sunt pierduti”

**43**. Which one is not a principle to the OSI model?

a. A layer should be created where a different abstraction is needed.

b. Each layer should perform a well-defined function.

c. The layer boundaries should be chosen to maximize the information

flow across the interfaces.

d. The function of each layer should be chosen with an eye toward

defining internationally standardized protocols.

**Explanation:**

Principles of OSI model:

1. A layer should be created where a different abstraction is needed.
2. Each layer should perform a well-defined function.
3. The function of each layer should be chosen with an eye toward defining internationally standardized protocols.
4. The layer boundaries should be chosen to minimize the information flow across the interfaces.
5. The number of layers should be large enough that distinct functions need not be thrown together in the same layer out of necessity and small enough that the architecture does not become unwieldy. (Numărul de straturi ar trebui să fie suficient de mare încât funcțiile distincte să nu fie reunite în același strat din necesitate și suficient de mic pentru ca arhitectura să nu devină greoaie)

**44**. Which of the following layers, controls the operation of a subnet and handles

how packets are routed from source to destination ?

a. The Network Layer

b. The Transport Layer

c. The Session Layer

d. The Presentation Layer

a. Network layer: Handles the routing and sending of data between different networks.

b. Transport layer: end-to-end communication between the two devices

**45**. Which protocol handles mail exchange?

a.FTP

b.TELNET

c.SSH

d.SMTP

a. FTP: file transfer protocol

b. Telnet utility allows users to test connectivity to remote machines and issue commands through the use of a keyboard.

c. The Secure Shell Protocol (SSH) is a cryptographic network protocol for operating network services securely over an unsecured network. Its most notable applications are remote login and command-line execution.

d. The Simple Mail Transfer Protocol (SMTP) is an internet standard communication protocol for electronic mail transmission.

**46**. Which one of the following is a Natural Mask?

a. 255.255.255.255

b. 255.255.255.0

c. 255.255.255.128

d. 255.255.255.64

b is the mask for the class C

**47**. IP - best effort protocol - does its best effort to transfort datagram from one machine to another with no guarantee of an

a. Successful delivery

b. Duplication/Unicity

c. Data integrity

d. All of the above

Best-effort delivery describes a network service in which the network does not provide any guarantee that data is delivered or that delivery meets any quality of service. In a best-effort network, all users obtain best-effort service. Under best-effort, network performance characteristics such as network delay and packet loss depend on the current network traffic load. When network load increases, this can lead to packet loss, retransmission, packet delay variation, and further network delay, or even session disconnect.

**48**. Which affirmation is not true about The Network Address Translation:

a. No need to be allocated range of addresses from ISP:- just one IP address is used for all devices

b. Can change addresses of devices in local network without notifying outside world

c. Can change ISP only by changing addresses of devices in local network

d. devices inside local net not explicitly addressable, visible by outside world

<https://github.com/AliceHincu/Theory-Concepts/blob/main/IP%20Datagram.md>

**49**. Which of the following affirmations about TCP is not true?

a. Client process must first be running

b. Server must have created socket that welcomes clientís contact

c. Allows server to talk with multiple clients

d. Source port numbers are used to distinguish clients

**50**. IP Routing is based on the:

a. Source IP

b. Destination IP

c. Network Address

d. Broadcast Address

„When an IP packet is to be forwarded, a router uses its forwarding table to determine the next hop for the packet's destination **(based on the destination IP address in the IP packet header**), and forwards the packet appropriately.”

<https://www.metaswitch.com/knowledge-center/reference/what-is-ip-routing>

**51**. Which is not a Service of a Data Link Layer?

a.Framing and link access

b.Flow Control

c.Error Correction

d.Traffic isolation

<http://www2.ic.uff.br/~michael/kr1999/5-datalink/5_01-overDLL.htm>

**52**. Consider a network 60.20.30.0/24. Computers within the network have the default gateway

60.20.30.1, which is the ip of the router. The DNS server has the ip 60.20.30.2 and has the

following entries in the DNS Table

google.ro 120.30.4.5

mywebsite.ro 60.20.30.3

A computer having the ip 60.20.30.4 opens the web browser and visits the website

mywebsite.ro.

What is the packet route through the network?

a) 60.20.30.4 -> 60.20.30.1 -> 60.20.30.3 -> 60.20.30.1 -> 60.20.30.3 -> 60.20.30.2 -> 60.20.30.4

b) 60.20.30.4 -> 60.20.30.2 -> 60.20.30.1 -> 60.20.30.3 -> 60.20.30.4 -> 60.20.30.2 -> 60.20.30.4

c) 60.20.30.4 -> 60.20.30.1 -> 60.20.30.2 -> 60.20.30.3 -> 60.20.30.1 -> 60.20.30.4

**d) 60.20.30.4 -> 60.20.30.1 -> 60.20.30.2 -> 60.20.30.1 -> 60.20.30.4 -> 60.20.30.1 ->**

**60.20.30.3 -> 60.20.30.1 -> 60.20.30.4**

computer -> router -> dns -> router -> computer -> router -> mywebsite -> router -> pc

<https://aws.amazon.com/blogs/mobile/what-happens-when-you-type-a-url-into-your-browser/>

**53**. What are the protocols involved in sending an email?

a) FTP

b) SMTP

c) TCP

d) POP3

e) HTTP

<https://cleanfox.io/blog/set-up-your-mailbox/discover-the-main-email-protocols-imap-smtp-pop/>

<https://support.microsoft.com/ro-ro/office/ce-sunt-imap-%C8%99i-pop-ca2c5799-49f9-4079-aefe-ddca85d5b1c>

**54**. TCP stands for...

a) Transfer Control Protocol

b) Transmission Connection Protocol

c) Transformation Central Protocol

d) Transmission Control Protocol

**55**. What is a datagram?

a) A structure used to get data from the user in order to synchronize the server

b) A basic transfer unit used in packet-switched networks, providing a connectionless

comunnication service

c) Information that can harm your computer if you're not careful with it

d) Millions of bytes configured in a big cluster which can be easily transferred

**56**. ARP can be used for...

a) Mapping network addresses to physical (MAC) addresses

b) Mapping public virtual addresses to private ip addresses

c) Publishing websites to the internet

d) Sending emails very fast

**57**. TCP, UDP and SCTP are part of

a) Application Layer

b) Internet Layer

c) Transport Layer

d) Link Layer

**58**. TCP Header contains the following entries:

a) Source Port, Destination Port, Sequence Number, Acknowledgement Number, Flags, Data

Offset, Checksum, Urgent Pointer - corect

b) Source IP, Destination IP, Pointer to MAC address, Connection unique identifier, Router IP, NAT

tables

c) Source Port, Destination Port, Length, Checksum

d) Source Mac, Destination Mac, Connection object, Checksum, Data hash

**59**. A company has three departments: Offices, Public and Managers.

The offices have 123 computers, Public Relationship has 30 computers and Managers have 6

computers.

The company wants to make a network such that:

- every computer has access to internet

- have minimum costs

- it must be certainly known from which department some webpages are accesed from

the HQ in another city

Provide a good configuration for these requirements:

a) 3 subnetworks, 192.168.0.0/24, 192.168.1.0/24, 192.168.2.0/24 for every department and

connect every subnet directly to the internet, using NAT, through a different provider

b) 3 subnetworks, 192.168.0.0/25, 192.168.0.128/27, 192.168.0.160/29 and connect them to a

central router which translates all the ips on 192.168.0.0/24 with the ip 30.0.0.5

c) 1 subnetwork for all the company, 192.168.0.0/24, connect computers to internet through a

router which translates every address ip to a public ip address with different class depending on

department

d) 3 subnetworks, 192.168.0.0/25, 192.168.0.128/27, 192.168.0.160/29, one router which

translates first network to 30.0.0.1, second to 30.0.0.2, and third to 30.0.0.3 – corect

Offices: 123+2 < 256 = 2^8ips

Public: 30+2 = 32 = 2^5ips

Managers: 6+2 = 8 = 2^3ips

a) too many addresses + it says „different provider” !!

b) „it must be certainly known from which department some webpages are accesed from” so we should not translate

c) it doesn’t make sense

d) it uses nat and we also know from each departament

**60**. What would be a network security recommandation?

a) Forwarding all traffic from the router ports to computer ports

b) Activate firewall and use good firewall rules

c) Use the default router password, everybody will expect that you change it, so not changing it

is a good strategy

d) Allow RDP connections on your computers

**61**. What is DSL and what it is used for?

a) Digital Subscriber Line; used to give access to internet through telephone lines

b) Digital Supplier Limit; verifies if the maximum connected users in a wi-fi network has been

reached

c) Describer Serial Link; used for serial cables to assure their connectivity in a network

d) Destination Source Limit; limits the number of packets sent and received, used for security

reasons

**62**. What is the difference between a switch and a hub?

a) The hub sends a packet specifically to an end point or more, the switch broadcasts the

message to all the network

b) The switch sends a packet specifically to an end point or more, the hub broadcasts the

message to all the network

c) The hub can send packets on large distances, but the switch is generally for home usage

d) There is no difference

**63**. The last address of IP address represents?

A. Broadcast

B. Network

C. Unicast address

D. Multicast

**64**. Which of the following IP addresses class is multicast?

A. Class A

B. Class B

C. Class C

D. Class D

**65**. Which of the following is correct regarding Class B address of IP address

A. Network 18 , Host 16

B. Network 14 , Host 16

C. Network 16 , Host 14

D. Network 12 , Host 14

**66**. How many layers are in TCP/IP ?

A. 7 layers

B. 4 layers

C. 6 layers

D. 5 layers

<https://ro.wikipedia.org/wiki/TCP/IP>

**67**. IPv4 Address is

A. 64 bit

B. 16 bit

C. 48 bit

D. 32 bit

**68**. DNS is the abreviation for

A. Dynamic Network System

B. Domain Name System

C. Domain Network Server

D. Dynamic Name System

**69**. What is the size of a MAC address?

A. 16 bits

B. 32 bits

C. 48 bits

D. 64 bits

6bytes, fiecare cu 8bitsi. (e in hexa)

**70**. MAC address is the example of?

A. Transport layer

B. Data link layer

C. Application layer

D. Physical layer

**71**. For error detection in TCP/IP we use?

A. Bit sum

B. Check sum

C. Error Flag

D. Error bit

**72**. The mount of data that can be carried in a given time is called?

A. Capacity

B. Scope

C. Bandwith

D. Limitation

**73**. What is the size of Host in Class B of an IP address?

A. 4

B. 8

C. 16

D. 32

**74**. What is the use of the ping command?

A. To test if your connection is wired or wireless

B. To test a device on the network is reachable

C. To get your MAC address

D. To get your IP address

**75**. What is a normal mask for a Class C network?

A. 255.255.255.1

B. 255.255.255.128

C. 255.255.0.0

D. 255.255.255.0

**76**. What does a protocol defines?

A. What data is communicated

B. How data is communicated

C. When data is communicated

D. None of the above

77. What is the use of Subnetting?

A. It divides one network into several smaller networks

B. It divides a network into network classes

C. It speeds upthe network

D. All of the above

**78**. ............. provides a connection oriented reliable service for sending data.

**tcp**

**79**. What is TTL?

a) Time To Leave

b) Total Time Limit

c) Time To Live

d) Time Tracking Limit

**80**. The following system calls are/is optional at the level of a TCP client:

e) socket()

f) listen()

g) bind()

h) connect()

**81**. Which one/ones of the following addresses have to be identical for all computers located in

the same local network(from a physical and logic point of view)

a) Network address

b) Broadcast address

c) IP address

d) MAC address

**82**. The ARP protocol helps with:

a) Determining the IP address when the MAC address is known

b) Determining the MAC address when the IP address is known

c) Determining the IP address when the DNS server is known

**83**. DHCP is a client/server protocol that automatically provides an Internet Protocol host with

its:

a) IP address

b) Subnet mask

c) MAC address

d) Default gateway

**84**. The maximum number of hosts a network with the netmask 255.255.255.224 is capable of

supporting is:

a) 2^(number of zeros in netmask)

b) 32

c) 30

d) 16

**85**. The natural mask for a class A address is :

a) 255.255.255.0

b) 255.226.255.0

c) 255.0.0.0

d) 255.255.0.0

**86**. Consider the following netmask: 255.255.0.0, the network part(network length) is formed by

a number of bits equal to:

a) 24

b) 16

c) 8

d) Impossible to determine

**87**. Which of the following describes 'big endian'?

A. most significant byte first

B. most significant byte last

C. least significant byte in the middle

D. most significant byte in the middle

E. None of the above.

<https://www.geeksforgeeks.org/little-and-big-endian-mystery/>

**88**. Which of the following describes 'little endian'?

A. least significant byte first

B. least significant byte last

C. least significant byte in the middle

D. most significant byte in the middle

E. None of the above.

**89**. What is the in-memory representation of 56E2 in little endian?

A. 56E2

B. E256

C. 2E65

D. 652E

**90**. What is the in-memory representation of 56E2 in big endian?

A. 56E2

B. E256

C. 2E65

D. 652E

**91**. How many bytes does 'double' use?

A. 1 byte

B. 4 bytes

C. 8 bytes

D. 16 bytes

**92**. How many bytes does 'float' use?

A. 1 byte

B. 4 bytes

C. 8 bytes

D. 16 bytes

**93**. What does TCP/IP stand for?

A. Transport Control Protocol/Internet Protocol

B. Transmission Check Protocol/Internet Protocol

C. Transmission Control Protocol/Inverse Protocol

D. Transmission Control Protocol/Internet Protocol

**94**. What type of connection does SOCK\_STREAM indicate?

A. TCP connection

B. UDP connection

C. Closed connection

D. Open connection

**95**. What type of connection does SOCK\_DGRAM indicate?

A. TCP connection

B. UDP connection

C. Closed connection

D. Open connection

**96**. What does UDP stand for?

A. User Defined Protocol

B. User Datalink Protocol

C. User Datagram Protocol

D. Utility Datagram Protocol

**97**. What does DNS stand for?

A. Dynamic Name Server

B. Dynamic Name System

C. Domain Name Server

D. Domain Name System

**98**. How many different network layers are there (according to the OSI Reference Model)?

A. 7 layers

B. 4 layers

C. 5 layers

D. 9 layers

E. The number of layers can vary.

**99**. The 4 bottom network layer (according to the OSI Refererence Model), in order, are the

following:

A. Physical, Data link, Network, Transport

B. Physical, Network, Data link, Transport

C. Physical, Data link, Transport, Network

D. Data link, Physical, Network, Transport

**100**. What does FTP stand for?

A. File Transmission Protocol

B. File Transfer Protocol

C. File Translocation Protocol

D. Folder Transmission Protocol

**101**. What is FTP used for?

A. It is a protocol used to check if the datalink layer is working proberly.

B. Transfering files over a network.

C. It is a protocol used by mail servers.

D. Accessing the WEB, sending HTML pages.

**102**. What does SSH stand fro?

A. Secure Shell Hook

B. Structured Shell Hook

C. Secure Shell

D. Structured Shell

**103**. What is SSH used for?

A. Remote connection to the terminal / command line of another computer (remote

command).

B. Transfering files over a network.

C. It is a protocol used by mail servers.

D. Accessing the WEB, sending HTML pages.

**104**. What is SMTP used for?

A. Remote connection to the terminal / command line of another computer (remote command).

B. Transfering files over a network.

C. It is a protocol used by mail servers (mail Excahange).

D. Accessing the WEB, sending HTML pages.

**105**. What does P2P stand for?

A. Peer to Peer.

B. Point to Point.

C. Point to Peer.

D. Peer to Point.

<https://en.wikipedia.org/wiki/Peer-to-peer>

**106**. What is the maximum bandwith, the maximum amount of data that the optical fiber can

carry?

A. 100 Mb/s

B. 1000 Mb/s

C. 100 000 Mb/s

D. There is no maximum.

It’s light

**107**. Since optical fiber has no limit in bandwith, what is a plausible reason for your lower

internet speed?

A. There is a limit to how much end devices can send an receive.

B. Your router/modem is limited.

C. You don't use fiber.

D. The contract with your ISP limits your bandwith.

E. All answers are correct.

**108**. If I have a zip of size 1024 bytes and a connection of 32 bits/second to the computer I want

to send the zip to, how long would it take for the zip to be sent?

A. 128 seconds

B. 1 second

C. 10 seconds

D. 1024 seconds

**This is incorrect, the correct answer is 1024\*8 / 32 = 256 seconds**

**109**. What kind of signal flows through the optical fiber cable have?

A. Electro-magnetic waves

B. Light waves

C. Both are of the above

D. Electric current

**110**. What type of physical signal does the wireless transmission use?

A. Electro-magnetic waves

B. Light waves

C. Both are of the above

D. Electric current

**111**. How long is an IPv4 address?

A. 4 bytes

B. 32 bytes

C. 16 bytes

D. 8 bytes

**112**. What does TLD stand for?

A. Total Level Domain

B. Total Level Distribution

C. Top Level Domain

D. Top Level Distribution

<https://en.wikipedia.org/wiki/Top-level_domain>

**113**. What does ISP stand for?

A. Internet Server Protocol

B. Inverse Service Protocol

C. Internet Service Provider

D. Internet Server Provider

**114**. Which of the following is a valid domain name?

A. nontendo.com

B. nds.nontendo.com

C. nds.nontendo.ro

D. All anssers are correct

**115**. What does ROTLD stand for?

A. Romanian Top Level Domain

B. Russian Overview Top Level Domain

C. Romanian Total Level Domain

D. Romanian Top Level Distribution

**116**. What is the 'Whois Query' used for?

A. Checking if a domain name is already bought or not.

B. Checking if a domain name has a server active and running.

C. Checking if an IP is present on a network.

D. Getting the IP of a domain name.

**117**. Which of the following represents an FTP (File Transfer Protocol)?

A. The TCP/IP

B. The SMB or SAMBA Protocol

C. The SSH Protocol

D. The SMTP

<https://en.wikipedia.org/wiki/Server_Message_Block>

**118**. What is HTML?

A. HTML is a langauge that is used to descirbe web pages.

B. HTML is a language used for server programming.

C. HTML is a language used for browser programming.

D. All of the above are true.

**119**. Which of the following is a correct mac address?

A. 12-34-56-78-90-AB-CD

B. G2-H3-24-13-12-3E

C. G2-H3-24-13-12-3E-CD

D. 12-34-56-78-90-AB

a) has 7bytes, not 6. b) and c) are not hex (letters are A - F)

**120**. What command would you use to find your network adapter's mac address if you are on

windows?

A. ipconfig

B. arp /d

C. ipconfig /all

D. All of the above would work.

**121**. What does ARP stand for?

A. Address Resolution Protocol

B. Address Refresh Protocol

C. Address Reconstructuion Protocol

D. Address Read Protocol

**122**. What dose LAN stand for?

A. Local Address Network

B. Local Address Name

C. Local Area Network

D. Local Area Name

**123**. What command would you use to test the Datalink Layer to see if it works (on Windows)?

A. arp /a

B. ipconfig /all

C. ipconfig

D. arp /d

E. All answers are correct.

**124**. Which of the following IP sets belong to 209.220.186.12/255.255.255.252 ip class?

A. 209.220.186.12, 209.220.186.13, 209.220.186.14, 209.220.186.15

B. 209.220.186.13, 209.220.186.14, 209.220.186.15, 209.220.186.16

C. 209.220.186.12, 209.220.186.13, 209.220.186.14, 209.220.186.15, 209.220.186.16,

209.220.186.17, 209.220.186.14, 209.220.186.18

D. 209.220.186.10, 209.220.186.11, 209.220.186.12, 209.220.186.13, 209.220.186.14,

209.220.186.15, 209.220.186.16, 209.220.186.17

.252 => mask /30 => 2^2 = 4ips => range: .12-15

**125**. Which of the following is a valid IP/Netmask combination?

A. 209.220.186.8/255.255.255.240

B. 209.220.186.8/255.255.255.0

C. 209.220.186.8/255.255.255.248

D. 209.220.186.8/255.255.255.252

E. C and D are both correct.

a) 256-240=16 ips available... 8%16 != 0 so CIDR is broken

b) 256 ips available ... 8%16 != 0

c) 256-248 = 8ips available ... 8%8 = 0 so it s good

d) 4ips available... 8%4 = 0 so it s good

**126**. How many bits of zero does the following netmask have? 255.255.255.248

A. 2 bits

B. 3 bits

C. 4 bits

D. 8 bits

**127**. Which is the correct binary representation of the following netmask? 255.255.255.128

A. 11111111 11111111 11111111 10000000.

B. 11111111 11111111 11111111 11110000.

C. 11111111 11111111 11111111 11000000.

D. 11111111 11111111 11111111 00000000.

**128**. What is the netmask for the following IP class? 192.168.0.0/24

A. 255.255.255.128

B. 255.255.255.0

C. 255.255.0.0

D. 255.0.0.0

E. All netmasks are correct.

**129**. What is the netmask for the following IP class? 10.10.0.0/17

A. 255.255.255.128

B. 255.255.255.0

C. 255.255.128.0

D. 255.255.0.0

E. All netmasks are correct.

It incorrect, the correct version is C, not D

/17 => 15 zeros

11111111.11111111.10000000.00000000

**130**. How do you find the network address if you have the network mask and one random IP

address in the network?

A. You 'and' the netmask and the random IP

B. You 'or' the netmask and the random IP

C. You add the netmask and the random IP

D. You 'xor' the netmask and the random IP

**131**. What will you get if you 'or' together the natmaks of a network and one random IP in the

network?

A. The ip class.

B. The first IP in the class of the random IP.

C. The last IP in the class of the random IP.

D. Nothing significant.

**132**. What does NAT stand for?

A. Network Address Translation

B. Name Address Translocation

C. Network Area Translation

D. Network Area Translocation

E. Name Area Translocation

**133**. Which of the following involve NAT?

A. Port forwarding.

B. Accessing the web from an internal network. Your PC's network will be translated to your

public IP (i. e. home network)

C. Both answers involve NAT.

<https://en.wikipedia.org/wiki/Port_forwarding>

**134**. Are mac addressed guaranteed to be unique?

A. No, buying the same type of a network adapter twice (from an online store) means you get

the same mac address.

B. No, the mac address is software related.

C. Depends on the network adapter you have.

D. Yes, because mac addresses are burned into the ROM of the network adapter.

**135**. What is a private IP address?

a) It's an IP address that does not have a netmask;

b) It's an IP address that is reserved for internal use behind a router or NAT device,

apart from the public;

c) It's an IP address that your device receives when connecting to public networks;

d) It's an IP address that has the following form: 127.0.x.x.

**136**. Which is the range for an IP address of class B?

a) 191-220;

b) 127-190;

c) 128-191;

d) 128-192.

10000000 -> 128

10111111 -> 128+64-1 = 191

**137**. What is the broadcast address of the following IP address 221.17.123.9 that has in its

network 42 computers?

a) 221.17.123.255;

b) 255.255.255.255;

c) 221.17.123.64;

d) 221.17.123.65.

42 + 2 = 44 < 64 = 2^6 => the mask is /26 =>

221.17.123.9 AND

255.255.255.192

= = = = = == =

221.17.123.0 network address => range is .0-.63 => **.63 broadcast**

**138**. What is the use of the ARP protocol?

a) To determine the IP address when we know the MAC address;

b) To determine the MAC address when we know the IP address;

c) To determine the IP address when we know the IP address of the DNS server;

d) To determine the MAC address when we know the default gateway.

**139**. What does UDP stand for?

a) User Datagram Protocol;

b) Universal Datagram Packets;

c) Unique Destination Protocol;

d) Undefined Destination Packets.

**140**. What is the subdomain for the top level domain for the following DNS address:

"linux.scs.ubbcluj.ro"?

a) "linux";

b) "scs";

c) "ubbcluj";

d) "ro".

**141**. Which is the difference between bandwidth and throughput?

a) The bandwidth is the physical property of the transmission medium, while

throughput represents the amount of data which we transmit

b) There is no difference between them;

d) The bandwidth represents the amount of data which we transmit, while throughput

is the physical property of the transmission medium.

**142**. What is a broadcast MAC address?

a) It's a logical address which identifies only one recipient;

b) It's a logical address which is used to identify all the computers within a network;

c) It's a logical identifier for a group of hosts in a computer network that are available

to process data-grams.

**143**. In how many subclasses with the netmask 255.192.0.0 can the class of minimal dimension

containing both IP addresses: 78.79.80.81 and 79.80.81.82, be divided?

a) 7;

b) 10;

c) 8;

d) 9.

78.79.60.81 = **0100111**0.01001111.01010000.01010001

79.80.81.82 = **0100111**1.01010000.01010001.01010010

= = = = = = = = = = = = = = =

**0100111**0.00000000.00000000.00000000 => the mask is /7

255.192.0.0 = 11111111.11000000.00000000.00000000 = /10 mask for subnet

So, they ask „in how many subnets with mask /10 can you split a /7 network ”

/7 = 2 \* /8 = 2 \* 2 \* /9 = 2 \* 2 \* 2 \* /10 = 8 \* /10

**144**. Which are the layers of the TCP/IP model?

a) Application layer, transport layer, session layer, network access layer;

b) Application layer, transport layer, internet layer, network access layer;

c) Application layer, presentation layer, session layer, transport layer, network layer,

data-link layer, physical layer;

d) Application layer, internet layer.

**145**. Which of the following does not describe a socket?

a. an internal endpoint for sending or receiving data at a single node ina computer.

b. a door between the application process and end-to-end transport protocol

c. a process that sends and receives data at a single node in a computer

„A socket is one endpoint of a two-way communication link between two programs running on the network.”

**146**. How do we obtain the starting address of a network from a given IP?

a. OR logic between IP given and NOT netmask

b. AND logic between IP given and NOT netmask

c. AND logic between IP given and netmask

**147**. Which is the order of the five-layer Internet protocol stack ?

a. Application, Transport, Network, Link, Physical

b. Network, Transport, Application, Link, Physical

c. Application, Transport, Link, Network, Physical

**148**. UDP vs. TCP flow control: Which statement is false?

a. UDP: one part can overflow, which results in lost packets

b. TCP: Traffic is controlled by the OS

c. TCP: one part can overflow but there are no lost packets

**149**. What is the length of the TCP header?

a. 32

b. 64

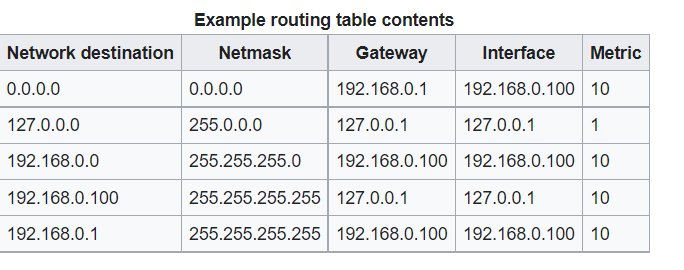
c. 20

**150**. What does a routing table contain?

a. source address, destination address, gateway, interface

b. interface, netmask, destination address, gateway

c. source address, destination address, netmask, gateway



**151**. What is Throughtput?

a. quantity of data which we send at some point through a transmission channel

b. quantity of data over quantity of time which we send at a given time through a

transmission channel

c. the capacity of data transportation that we send through a transmission channel

**152**. What does traceroute?

a. shows all IPs of the routers parsed until the current IP

b. shows all IPs parsed until the current router IP

c. shows the IP route of the last 5 parsed

**153**. What is a congestion window?

a. a sender impose window implemented to avoid overrunning some routers in the middle of

the network path

b. a window managed by the receiver; that grows when each segment is sent

c. a window that controls flow moving of the sender

„In TCP, the congestion window (CWND) is one of the factors that determines the number of bytes that can be sent out at any time. The congestion window is maintained by the sender and is a means of stopping a link between the sender and the receiver from becoming overloaded with too much traffic”

**154**. Which of these addresses is not private?

a. 10.255.189.255

b. 172.168.0.1

c. 192.168.255.255

**155**. What is checksum?

a. is a 16-bit field used on the header and data to check for errors.

b. is a 32-bit field used for error checking of data and IP address

c. is a 16-bit flag used for error checking of the header and data

**156**. Which of the addresses is a valid private address?

a. 10.255.256.0/29

b. 10.255.255.0/28

c. 193.168.0.0/29

**157**. Which is the third level in the OSI Refference Model Layer?

a. Network

b. Session

c. Transport

**158**. Which is the network address of the second subnet of a network having 93 computers,

where the first contains 22 computers, and starts from 192.168.0.0?

a. 192.168.0.33

b. 192.168.0.32

c. 192.168.0.24

N1: 22 computers < 32ips => from 192.168.0.0 to 192.168.0.31, so the next one is .32

**159**. The natural mask for a class B address is:

a. 255.0.0.0

b.255.255.0.0

c.255.255.255.0

**160**. The last network address is reserved for the ......... . (broadcast)

**161**. The size of a class C IP Adresses per network is .......... Hosts. (254)

**162**. DHCP stands for ................... ......... ................ Protocol. (Dynamic Host Configuration)

**163**. The network address of the third subnet of a network having 93 computers that starts from

192.168.0.0, where the first contains 22 computers and the second has 10 hosts is ........................

(192.168.0.48)

N1: 22computers+3 < 32 ips => range : .0-.31

N2: 10computers+3 < 16 ips => range: .32-.47

So, N3 starts from .48

**164**. The networks can be classified on the types of transmission as .......... switching and ..........

switching (circuit, packet).

**165**. What is a property of a computer network?

a. all components are linked to a router.

b. all components are interconnected.

c. all components are linked using a coaxial cable.

d. it has only PCs and workstations.

**166**. Which of the following is NOT a computer network?

a. The Internet.

b. Worldwide telephone system.

c. A PC connected to headphones.

d. Telephone system.

**167**. If AB12 is represented in big endian as AB12, what is its representation in little endian?

a. 21BA.

b. 12BA.

c. BA21.

d. 12AB.

**168**. If 43ED is represented in big endian as AB12, what is its representation in little endian?

a. DE34.

b. ED43.

c. DE43.

d. ED34.

**169**. What function call you don't find in an UDP server?

a. recvfrom.

b. bind.

c. sendto.

d. accept.

„UDP sockets have a 'connect' call, but do not have an 'accept' call for server applications.”

**170**. What happens with the bytes that are not read by a TCP server?

a. Are lost forever.

b. Are sent back to source.

c. Stay avalaible for next read.

d. Are transfered to a special location in the network.

**171**. How many bits have an IP address?

a. 64.

b. 32.

c. 4.

d. 16.

**172**. Which of the following is NOT a valid IP netmask combination?

a. 168.220.186.8/225.255.225.252.

b. 156.198.186.8/255.255.255.254.

c. 209.198.186.8/255.255.255.246.

d. 168.220.186.64/255.255.255.240.

**173**. When you have an ip address and the network mask what operation you need to do in order to find out the network address?

a. or between ip and netmask.

b. and between ip and netmask.

c. divide the ip by the mask.

d. you can't find the network address.

**174**. Which of the following is NOT a valid IP netmask combination?

a. 168.220.186.8/225.255.225.252.

b. 156.198.186.16/255.255.255.254.

c. 209.198.186.8/255.255.255.248.

d. 168.220.186.8/255.255.255.240.

**175**. Which of the following is a class C IP address?

a)10.10.14.118

b) 135.23.112.57

c)191.200.199.199

d)204.67.118.54

**176**. UDP packets are encapsulated in:

a) en Ethernet frame

b) a TCP segment

**c)an IP diagram ??????**

d)none of the above

**177**. Which of the following functions does UDP perform?

a) process to process communication

b) improve the data transfer rate of large files (compared to TCP) ?

c) assure that the sent messages arrive in the order that have been sent

d )protect the data sent against any corruption while transferring it.

**178**. Which of the following is not an application layer protocol?

a)HTTP

b)IMAP

c)SMTP

d)TCP

**179**. A one-to-all communication between one source and all hosts on a network can be classified as:

a) unicast communication

b) broadcast communication

c) multicast communication

d) anycast communication

**180**. The data link layer takes packets from .............. and encapsulated them into frames for

transmission

a) network layer

b)physical layer

c) transport layer

d) application layer

**181**. FTP uses the following channels:

a) the delta channel

b) the control channel

c) the bearer channel

d) the data channel

FTP is a client-server protocol that relies on two communications channels between client and server: a command(control) channel for controlling the conversation and a data channel for transmitting file content.

**182**. Which IP address class can have 64 000 subnets with 64 000 hosts/subnet?

a) class A

b) class B

c) class C

d) class D

Class A

Subnet : 254 host : 16 million

Class B

Subnet : 65554 host : 65554

Class C

Subnet : 16 million host : 254

**183**. Which can be an Ethernet physical address?

a) 07:01:02:01:2C:4B

b) 07:01:02:01:2C:4B:2C

c) 07:02:01:2C:4B

d) none of the above

**184**. The underlying transport layer protocol used by SMTP:

a)TCP

b)UDP

c)both TCP and UDP

d)none of the above

**185**. In HTTP Protocol, a client can directly connect to a server using:

a)Web

b)Domain

c)TELNET

d)HTTP

„Telnet is commonly used for remote terminal sessions, but it can generally connect to any TCP server, including HTTP servers”

**186**. Internet API is a set of rules that the sending program must follow so that the Internet

can deliver the data to the destination program. **TRUE**

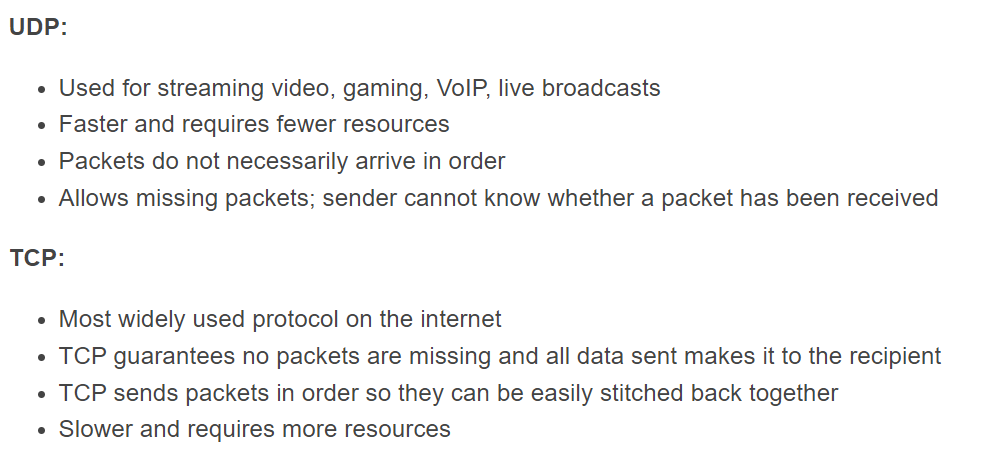
**187**. UDP is used together with IP when small amounts of information are involved but it uses

more system resources than TCP. **FALSE**

*Correct*:

UDP is used together with IP when small amounts of information are involved and uses

fewer system resources than TCP.



**188**. When configuring email clients, an Internet address for an SMTP server must be entered.

**TRUE**

**189**. File Transfer Protocol (FTP) provides the transmission in encrypted form to provide

security for sensitive data. **FALSE**

*Correct*:

File Transfer Protocol (FTP) provides a method for copying files over a network

from one computer to another.

**190**. The Open System Interconnection (OSI) model defines a networking framework to

implement protocols in layers, with control passed from one layer to the next. **TRUE**

**191**. The Transport Layer manages the mapping between these logical addresses and physical

addresses. In IP networking, this mapping is accomplished through the Address Resolution

Protocol (ARP). **FALSE**

*Correct*:

The Network Layer manages the mapping between these logical addresses

and physical addresses. In IP networking, this mapping is accomplished through the

Resolution Protocol (ARP).

**192**. The maximum number of IP addresses that can be assigned to hosts on a local subnet that

uses the 255.255.255.224 subnet mask is 40. **FALSE**

*Correct*:

255.255.255.224 is a class A/27 and its last 5 bits are zero=> provides 8

subnets, each with 30 hosts.

**193**. The subnetwork address of a host with an IP address of 172.16.66.0/21 is 172.16.64.0. **TRUE**

**194**. To test the IP stack on your local host, you would ping the IP address 127.0.0.0 **FALSE**

*Correct*: 127.0.0.1

**195**. A switch does not keep a record of the MAC addresses of the devices connected to it. **FALSE**

*Correct*: A switch keeps a record of the MAC addresses of all the devices connected to

it

**196**. The UDP .......... identifies the destination port and a reply port. (**header**)

**197**. TCP/IP allows a packet to be sent without waiting for the ...................of the previous

packet. (**acknowledgement**)

**198**. A 10/100Mbps hub must share its .............. with each and every one of its ports.

(**bandwidth**)

**199**. A router is typically connected to at least two networks, commonly two .............or..........

or a LAN and its ISP’S network . ( **Local Area Networks (LANs), Wide Area Networks**

**( WANs))**

**200**. ............ is a Computer Network diagnostic tool for displaying the route (path) and

measuring transit delays of packets across an (IP) network. (**traceroute**)

**201**. A ............... defines the format and the order of messages exchanged between two or

more communicating entities. (**protocol**)

**202**. The TCP/IP...........is used to detect corruption of data over a TCP or IPv4 connection.

(**checksum**)

**203**. ....................in a network may occur when the load on the network is greater than the

capacity of the network. (**congestion**)

**204**. HTTP Protocol allows exchange of ......... and .......... (**HTML, Web data**)

**205**. Address Resolution Protocol (ARP) is a protocol for mapping an ..............to a

.........................that is recognized in the local network. (**Internet Protocol address (IP**

**address) , physical machine address**)

**206**. UDP guarantees datagram delivery :

a) True

**b) False**

**207**. The socket type used by TCP is SOCK\_STREAM

**a) True**

b) False

**208**. With UDP, one party can overflow the other => lost packets

**a) True**

b) False

**209**. The connect system call is normally called by the client process in order to connect to a

server process.

**a) True**

b) False

**210**. The listen system call indicates to the protocol that the client process is ready to accept

new incoming connections on the socket

a) True

**b) False**

**211**. At the level of a TCP client, the bind system call is mandatory

a) True

**b) False**

**212**. The high order bits of an IP Address represent the host part.

a) True

**b) False**

**213**. All the hosts from the same network can physically reach each other without an

intervening router.

**a) True**

b) False

**214**. A network address can be determined based on a IP Address from the network and the

netmask

**a) True**

b) False

**215**. Always, in a class of addresses, the first and last IP addresses are reserved.

**a) True**

b) False

**216**. For connecting a host with a private address to the Internet, it has to be translated to a

public address, process named ARP.

a) True

**b) False**

**217**. 172.16.0.0/12 refers to a private address space.

**a) True**

b) False

**218**. A DNS server is responsible with translating numerical IP addresses to domain names.

a) True

**b) False**

**219**. The network address can be obtained from an IP address and the netmask using the

logical operation “OR”

a) True

**b) False**

**220**. When NAT is involved, the local network uses just one IP address as far as outside world is

concerned

**a) True**

b) False

**221**. The number of IP addreses allocated for each subnet block has to be a power of 4.

a) True

**b) False**

**222**. 209.220.186.8/255.255.255.248 is a invalid IP/Netmask combination

a) True

**b) False**

**223**. The default gateway serves as an access point or IP router that a networked computer

uses to send information to a computer in the same network or the Internet.

a) True

**b) False**

**224**. A 255.255.255.240 netmask is capable of supporting 16 hosts.

a) True

**b) False**

**225**. A computer uses HTTP to look up domain names and get the associated IP address.

a) True

**b) False**

**226**. There is no routing based on MAC addresses

**a) True**

b) False

**227**. A proxy server acts as an intermediary for requests from clients seeking resources from

other servers

**a) True**

b) False

**228**. The combination DNS server = Default Gateway is not possible

a) True

**b) False**

**229**. A collection of computers (PCs, Workstations) and other devices interconnected represent a

computer network.

**A. True**

B. False

**230**. Hosts (computers), links (coaxial cable, twisted pair, optical fiber, radio, satellite), switches/

routers (intermediate systems) are all components of a computer system.

**A. True**

B. False

**231**. Big Endian means 'most significant byte first' while little endian means 'least significant byte first.

**A. True**

B. False

**232**. SOCK\_STREAM is used for UDP connections.

A. True

**B. False**

**233**. SOCK\_DGRAM is used for UDP connections.

**A. True**

B. False

**234**. The optical fiber cable theoretically has unlimited bandwith.

**A. True**

B. False

**235**. Every domain name that is not already in use is free to claim as your own.

A. True

**B. False**

**236**. 255.255.255.128 starts with 1 zero and ends with 7 zeroes.

A. True

**B. False**

**237**. 255.255.255.128 ends with 7 zeroes.

**A. True**

B. False

**238**. Port forwarding is a use of NAT.

**A. True**

B. False

**239**. Mac addresses are not guaranteed to be unique.

A. True

**B. False**

#SWITCH

1.Un switch are mai multe porturi -> **True**

2.Un switch nu intelege adrese MAC -> **False**

3.Un switch intelege adrese MAC -> **True**

4.Un switch este mai performant ca un hub -> **True**

5.Un switch poate transporta pachete UDP -> **True**

6.Un switch poate transporta pachete TCP -> **True**

7.Un switch poate transporta pachete IP -> **True**

8.Un switch nu poate transporta pachete TCP -> **False**

9.Un switch nu poate transporta pachete UDP -> **False**

10.Un switch nu poate transporta pachete IP -> **False**

#HUB

1.Un hub nu intelege adrese MAC -> **True**

2.Un hub intelege adrese MAC -> **False**

3.Un hub este mai performant ca un switch -> **False**

4.Un hub nu are mai multe porturi -> **False**

5.Un hub are mai multe porturi -> **True**

#ADRESA-MAC

1.Apelul recvfrom() trimite date catre serverul UDP -> **False**

2.Adresa MAC este reprezentata pe 12 cifre hexa. -> **True**

3.Adresa MAC are un numar de 64 de biti -> **False**

4.Adresa MAC este reprezentata pe 6 cifre hexa. -> **False**

5.Adresa MAC este reprezentata pe 6 grupuri de 2 cifre hexa. -> **True**

6.Adresa MAC este reprezentata pe 6 octeti. -> **True**

7.Adresa MAC nu poate fi schimbata. -> **False**

8.Adresa MAC poate fi schimbata. -> **True**

9.FF:FF:FF:FF:FF este adresa MAC de broadcast. -> **False**

10.FF:FF:FF:FF:FF:FF este adresa MAC de broadcast -> **True**

11.FF:FF:FF:FF:FF:FF nu este adresa MAC de broadcast -> **False**

12.FF:FF:FF:FF:FF nu este adresa MAC de broadcast. -> **True**

13.00:00:00:00:00:00 nu este adresa MAC de broadcast. -> **True**

14.172.31.255.255 nu este o adresa IP privata -> **False**

15.Routerele folosesc adrese MAC pentru a transmite cadrele catre alte retele -> **False**

16.255.255.255.255 este adresa MAC de broadcast. -> **False**

17.255.255.255.255 nu este adresa MAC de broadcast -> **True**

18.Toate placile de reţea au aceeasi adresa MAC (Media Access Control address) -> **False**

#NIVEL LINK TRANSPORT APLICATIE RETIA

1.SSH nu este situat la nivelul Link -> **True**

2.SSH nu este situat la nivelul Transport -> **True**

3.SSH nu este situat la nivelul Retea -> **True**

4.SSH este situat la nivelul Transport -> **False**

5.SSH este situat la nivelul Link -> **False**

6.SSH este situat la nivelul Retea -> **False**

7.SSH nu este situat la nivelul Aplicatie -> **False**

8. SSH este situat la nivelul Aplicatie -> **True**

-**SHH NU**

1.IP este situat la nivelul Transport -> **False**

2.IP este situat la nivelul Aplicatie -> **False**

3.IP este situat la nivelul Retea -> **True**

4.IP este situat la nivelul Link -> **False**

5.IP nu este situat la nivelul Transport -> **True**

6.IP nu este situat la nivelul Retea -> **False**

7.IP nu este situat la nivelul Aplicatie -> **True**

8.IP nu este situat la nivelul Link -> **True**

-Ip DA(RETEA)

1.HTTP este situat la nivelul Link -> **False**

2.HTTP nu este situat la nivelul Aplicatie -> **False**

3.HTTP nu este situat la nivelul Link -> **True**

4.HTTP este situat la nivelul Transport -> **False**

5.HTTP este situat la nivelul Aplicatie -> **True**

6.HTTP nu este situat la nivelul Transport -> **True**

7.HTTP nu este situat la nivelul Retea -> **True**

-HTTP DA(Aplicatie)

1.SMTP nu este situat la nivelul Retea -> **True**

2.SMTP este situat la nivelul Transport -> **False**

3.SMTP este situat la nivelul Retea -> **False**

4.SMTP nu este situat la nivelul Link -> **True**

5.SMTP este situat la nivelul Retea -> **False**

6.SMTP nu este situat la nivelul Transport -> **True**

7.SMTP este situat la nivelul Aplicatie -> **True**

8.SMTP este situat la nivelul Link -> **False**

9.SMTP nu este situat la nivelul Aplicatie -> **False**

-SMTP DA(Aplicatie)

1.DNS nu este situat la nivelul Aplicatie -> **False**

2.DNS nu este situat la nivelul Link -> **True**

3.DNS nu este situat la nivelul Retea -> **True**

4.DNS nu este situat la nivelul Transport -> **True**

5.DNS este situat la nivelul Link -> **False**

6.DNS este situat la nivelul Transport -> **False**

7.DNS este situat la nivelul Aplicatie -> **True**

8.DNS este situat la nivelul Retea -> **False**

-DNS DA(Aplicatie)

1.FTP nu este situat la nivelul Link -> **True**

2.FTP nu este situat la nivelul Transport -> **True**

3.FTP nu este situat la nivelul Retea -> **True**

4.FTP nu este situat la nivelul Aplicatie -> **False**

5.FTP este situat la nivelul Transport -> **False**

6.FTP este situat la nivelul Retea -> **False**

7.FTP este situat la nivelul Link -> **False**

-FTP (Aplicatie)

1.TCP este situat la nivelul Aplicatie -> **False**

2.TCP este situat la nivelul Retea -> **False**

3.TCP nu este situat la nivelul Link -> **True**

4.TCP este situat la nivelul Transport -> **True**

5.TCP nu este situat la nivelul Retea -> **True**

6.TCP nu este situat la nivelul Transport -> **False**

7.TCP nu este situat la nivelul Aplicatie -> **True**

-TCP DA(TRANSPORT)

1.UDP nu este situat la nivelul Retea-True

2.UDP este situat la nivelul Retea-False

3.UDP este situat la nivelul Aplicatie-False

4.UDP nu este situat la nivelul Aplicatie-True

5.UDP este situat la nivelul Transport-True

6.UDP este situat la nivelul Link-False

7.UDP nu este situat la nivelul Link-True

8.UDP nu este situat la nivelul Transport-False

-UDP DA(Transport)

#Adresa-de-retea

1.Adresa 192.168.0.255 nu poate fi adresa de retea-True

2.Adresa 127.0.0.1 poate fi adresa de retea.-False

3.Adresa 193.231.20.2 poate fi adresa de retea-False

4.Adresa 193.256.20.0 poate fi adresa de retea-False

5.Adresa 193.231.20.1 poate fi adresa de retea - False

7.Adresa 193.231.20.3 poate fi adresa de retea-False

8.Adresa 43.29.45.80/27 poate fi adresa de retea-False

9.Adresa 192.168.2.160/24 poate fi adresa de retea-False

10.Adresa 43.23.87.68/26 poate fi adresa de retea-False

11.Adresa 192.168.2.160/25 poate fi adresa de retea-False

12.Adresa 192.168.0.255 poate fi adresa de retea-False

-Niciuna nu e adresa de retea

1.Adresa 193.255.20.0 poate fi adresa de retea-True

2.Adresa 193.231.20.0 poate fi adresa de retea-True

3.Adresa 193.231.20.4 poate fi adresa de retea-True

4.Adresa 192.168.2.32/27 poate fi adresa de retea-True

5.Adresa 43.23.87.64/27 poate fi adresa de retea-True

6.Adresa 192.168.2.128/25 poate fi adresa de retea-True

1.Adresa de retea se poate calcula pe baza adresei de broadcast si a netmask-ului-True

2.Adresa de retea se poate calcula pe baza adresei de broadcast si a adresei IP-False

3.Adresa de retea nu se poate calcula pe baza adresei de broadcast si a netmask-ului-False

4.Adresa de retea nu se poate calcula pe baza adresei IP si a netmask-ului-False

5.Adresa de retea nu se poate calcula pe baza adresei de broadcast si a adresei IP-True

6.Adresa de retea se poate calcula pe baza adresei IP si a netmask-ului-True

1.Nu exista mai multe calculatoare cu adresa 127.0.0.1 -> **False (local host)**

#Adresa-privata

-Nu s bun

1.Toate adresele IP din clasa 172.0.0.0/8 sunt private-False

2.Nu toate adresele IP din clasa 172.0.0.0/8 sunt private - True

3.168.168.168.168 este o adresa IP privata-False

4.168.168.168.168 nu este o adresa IP privata - True

5.1.1.1.1 este o adresa IP privata-False

6.Nu toate adresele IP din clasa 10.0.0.0/6 sunt private-True

7.127.16.0.1 nu este o adresa IP privata-True

8.Toate adresele IP din clasa 172.0.0.0/12 sunt private-False

9. 127.16.0.1 este o adresa IP privata-False

10. 172.32.0.1 este o adresa IP privata-False

11 .1.1.1.1 nu este o adresa IP privata-True

12 .172.15.0.1 nu este o adresa IP privata-True

13 .Nu toate adresele IP din clasa 192.168.0.0/8 sunt private-True

-Bune

1.Toate adresele IP din clasa 172.16.0.0/12 sunt private-True

2.172.16.0.1 nu este o adresa IP privata-False

3.172.31.0.1 nu este o adresa IP privata-False

4.Nu toate adresele IP din clasa 192.168.0.0/16 sunt private-False

5.Toate adresele IP din clasa 10.0.0.0/16 sunt private-True

6.192.168.168.168 nu este o adresa IP privata-False

7.172.31.255.255 este o adresa IP privata-True

8.172.31.255.255 nu este o adresa IP privata-False

9.Nu toate adresele IP din clasa 10.0.0.0/8 sunt private-False

10.10.10.10.10 este o adresa IP privata-True

11.Toate adresele IP din clasa 10.0.0.0/8 sunt private-True

12.172.16.0.1 este o adresa IP privata-True

13.Nu toate adresele IP din clasa 172.16.0.0/12 sunt private-False

14.192.168.168.168 este o adresa IP privata-True

15.Nu toate adresele IP din clasa 10.0.0.0/16 sunt private-False

#Prescurtari

-True

1.Prescurtarea CLI vine de la Command Line Interface-True

2.ARP inseamna Address Resolution Proocol-True

3.MAC inseamna media access control.-True

4.DNS inseamna Domain Name System-True

-False

1.Doua calculatoare din Internet pot sa aiba aceeasi adresa IP daca au aceeasi adresa MAC-False

2.LAN reprezinta un acronim pentru: Limited Area Network-False

3.HTTP inseamna Hyperspeed Transfer Protocol-False

4.HTTP inseamna Hypertext Transfer Protocol-True

5.MAC inseamna media address control.-False

6.MAC inseamna media address control-False

7.Prescurtarea CLI vine de la Coding Line Interface-False

8.ARP nu inseamna Address Resolution Proocol-False

#Topologii

1.Exista doar doua topologii standard de retea: Magistrala (Bus); Stea (Star) - False

2.Ring este o topologie de retea-True

3.Ring nu este o topologie de retea-False

4.Star nu este o topologie de retea - False

5.Exista mai mult de doua topologii standard de retea-True

6.Bus este o topologie de retea. - True

7.Star este o topologie de retea-True

8.DNS inseamna Domain Name Service-False

9.Bus nu este o topologie de retea-False

#Protocolul

1.HTTP nu foloseste protocolul TCP-False

2.HTTP foloseste protocolul UDP-False

3.DNS foloseste protocolul TCP - False

4.DNS foloseste protocolul UDP-True

5.HTTP foloseste protocolul TCP-True

#Orientare-conexiune

1.UDP este orientat conexiune-False

2.UDP nu este orientat conexiune-True

3.TCP este orientat conexiune-True

4.TCP nu este orientat conexiune-False

#Defaiult-Gateway

1.Default gateway-ul unui calculator este IP-ul serverului din reteaua respectiva-False

2.Default gateway-ul unui calculator este IP-ul routerului din reteaua respectiva-True

3.Default gateway-ul unui calculator se afla in aceeasi retea cu el - True

4.Default gateway-ul unui calculator nu se afla in aceeasi retea cu el-False

5.Un calculator poate avea 2 gateway-uri-False

6.Un server DNS nu poate fi Default Gateway-False

#Dimensiunea

1.Dimensiunea unei clase de adrese IP nu trebuie sa fie putere a lui 2-False

2.Dimensiunea unei clase de adrese IP trebuie sa fie putere a lui 2-True

3.Dimensiunea unei retele este 2^n; unde n este numarul de cifre 0 din IP.-True

4.Dimensiunea unei retele este 2^n; unde n este numarul de cifre 0 din netmask-True

5.Dimensiunea unei retele este 2^n; unde n este numarul de cifre 1 din netmask-False

#Calculator

1.Un calculator poate avea mai multe placi de retea-True

2.Un calculator poate avea o singura placa de retea-False

3.Nu pot exista calculatoare cu adresa 192.168.1.0-False

4.Un calculator poate avea mai multe adrese IP-True

5.Un calculator nu poate avea 2 gateway-uri-True

6.Serverul DNS setat pe un calculator trebuie localizat in aceeasi retea cu calculatorul-False

7.In LAN nu pot exista mai multe calculatoare cu adresa 192.168.1.1-True

8.Pot exista calculatoare cu adresa 192.168.1.0-True

9.Doua calculatoare din Internet pot sa aiba aceeasi adresa IP daca au aceeasi adresa MAC-False

10.Un calculator poate avea o singura adresa IP-False

11.Un calculator de leaga de un switch cu un cablu Straight-Through-True

12.Doua calculatoare plasate in aceeasi retea atat din punct de vedere fizic cat si logic nu pot

avea default gateway-uri diferite-False

13.Un router se leaga de un calculator cu un cablu Cross-Over-True

#Server

1.Un server web nu poate rula si pe porturi diferite de 80-False

2.Serverul DNS setat pe un calculator poate fi localizat in aceeasi retea cu calculatorul-True

3.Un server DNS poate fi Default Gateway-True

4.Pe un acelasi server web nu pot fi gazduite mai multe site-uri web-False

#Netmask-ul

1.Netmask-ul NU poate contine biti 0 intercalati cu biti de 1-True

2.Netmask-ul se poate determina pe baza adresei IP si a adresei de retea-False

3.Netmask-ul se poate determina pe baza adresei IP si a adresei de broadcast-False

4.0.0.0.0 reprezinta un netmask valid-True

5.255.255.224.0 reprezinta un netmask valid-True

6.Netmask-ul unei retele cu 1024 adrese ip este /10-False

7.255.255.0.0 reprezinta un netmask valid-True

8.O retea cu netmask-ul 255.255.255.0 poate avea maxim 2^8-2=254 calculatoare.-True

9.Netmask-ul unei retele cu 1024 adrese ip este /12-False

10.Netmask-ul unei retele cu 512 adrese ip este /23-True

11.0.0.0.0 nu reprezinta un netmask valid-False

12.255.254.0.0 reprezinta un netmask valid-True

13.Netmask-ul nu se poate determina pe baza adresei IP si a adresei de retea-True

14.Netmask-ul unei retele cu 1024 adrese ip este /22-True

15.Netmask-ul nu se poate determina pe baza adresei IP si a adresei de broadcast-True

16.Un netmask este un numar binar pe 48 de biti-False

17.O retea cu netmask-ul 255.255.255.0 are 2^8=128 ip-uri-False

18.255.255.225.0 reprezinta un netmask valid-False

19.Netmask-ul unei retele cu 512 adrese ip este /24-False

20.Netmask-ul unei retele cu 1024 adrese ip este /23-False

21.Netmask-ul se poate calcula pe baza adresei de broadcast si a adresei de retea-True

22.Netmask-ul poate conţine biţi 0 intercalaţi cu biţi de 1-False

23.254.255.0.0 reprezinta un netmask valid-False

24.O retea cu netmask-ul 255.255.255.0 poate avea maxim 2^8=256 calculatoare.-False

#Exista

1.Exista si altfel de socketuri decat TCP si UDP-True

2.Exista doar socketuri TCP si UDP. False

3.Un netmask este un numar binar pe 32 de biti-True

#127.0.0.1

1.Nu pot exista mai multe calculaoare cu adresa 127.0.0.1 False

2.Exista mai multe calculatoare cu adresa 127.0.0.1-True

3.Adresa 127.0.0.1 poate fi adresa de broadcast. False

4.127.0.0.1 nu poate fi setata pe un sistem ca default gateway-False

5.127.0.0.1 nu poate fi setata pe un sistem ca server DNS-True

5.Localhost nu este 172.0.0.1-True

6.Localhost este 172.0.0.1-False

7.Nu pot exista mai multe calculaoare cu adresa 127.0.0.1-False

8.Adresa 127.0.0.1 nu poate fi adresa de retea-True

#/etc

1.83.255.255.128.0 = /23=-False

2.255.255.128.0 = /17. True

3.11111111.10000000.00000000.00000000 = 255.128.0.0-True

4.193.55.44.170 & 255.255.255.128 = 193.55.43.128-True

5.11111111.10000000.00000000.00000000 = 255.1.0.0-False

#Rapiditate

1.TCP este intotdeauna mai rapid ca UDP-False

2.UDP este uneori mai rapid ca TCP-True

3.TCP este uneori mai rapid ca UDP - True

4.UDP este intotdeauna mai rapid ca TCP-False

5.TCP este mai sigur ca UDP-True

#Apeluri

1.Apelul accept() este obligatoriu in orice server TCP-True

2.Apelul accept() este obligatoriu in orice client UDP-False

3.Apelul accept() poate fi folosit in orice server TCP-True

4.Apelul accept() este obligatoriu in orice client TCP-False

5.Apelul accept() nu este obligatoriu in orice client TCP-True

1.Apelul recvfrom() citeste date de la serverul UDP-True

2.Apelul recvfrom() citeste date de la serverul TCP-False

3.Apelul recvfrom() trimite date catre clientul TCP-False

4.Apelul recvfrom() trimite date catre clientul UDP-False

5.Apelul recvfrom() nu trimite date catre serverul TCP -True

6.Apelul recvfrom() nu trimite date catre clientul TCP-True

7.Apelul recvfrom() trimite date catre serverul UDP-False

8.Apelul recvfrom() trimite date catre serverul TCP-False

9.Apelul recvfrom() nu trimite date catre clientul UDP-True

10.Apelul recvfrom() citeste date de la clientul UDP-True

11.Apelul recvfrom() citeste date de la clientul TCP-False

1.Apelul connect() este obligatoriu in orice server TCP-False

2.Apelul connect() este obligatoriu in orice client UDP-False

3.Apelul connect() nu poate fi folosit in clienti UDP-True

4.Apelul connect() nu poate fi folosit in clienti TCP-False

5.Apelul connect() poate fi folosit in clienti UDP-False

6.Apelul connect() poate fi folosit in clienti TCP-True

7.Apelul connect() este obligatoriu in orice server UDP-False

8.Apelul connect() este obligatoriu in orice client TCP-True

1.Apelul sendto() trimite date catre clientul UDP-True

2.Apelul sendto() trimite date catre serverul UDP-True

3.Apelul sendto() trimite date catre serverul TCP-False

4.Apelul sendto() trimite date catre clientul TCP-False

1.Apelul listen() este obligatoriu in orice client TCP-False

2.Apelul listen() nu este obligatoriu in orice client TCP-True

3.Apelul listen() este obligatoriu in orice server UDP-False

4.Apelul listen() poate fi folosit in orice server TCP-True

5.Apelul listen() este obligatoriu in orice server TCP-True

1.Apelul bind() poate fi folosit in clienti UDP-True

2.Apelul bind() poate fi folosit in clienti TCP-True

3.Apelul bind() nu poate fi folosit in clienti UDP-False

4.Apelul bind() nu poate fi folosit in clienti TCP-False

5.Apelul bind() este obligatoriu in orice server TCP-True

6.Apelul bind() este obligatoriu in orice client TCP-False

7.Apelul bind() este obligatoriu in orice server UDP-True

#Clase si Ip-uri

1.O clasa /24 se poate imparti in 2 subclase /25.-True

2.O clasa de adrese IP trebuie sa inceapa la multiplu de dimensiunea clasei-True

3.O clasa de adrese IP nu trebuie sa inceapa la multiplu de dimensiunea clasei-False

4.O clasa /24 se poate imparti in 2 subclase de 128 IP.-True

5.O clasa /24 se poate imparti in 3 subclase de 128 IP.-False

6.192.168.2.155 face parte din clasa 192.168.0.0/23-False

7.192.168.1.2/24 si 192.168.1.6/22 fac parte din aceasi retea-False

8.O retea cu netmask-ul 255.255.255.0 are 2^8=256 ip-uri.-True

9.O clasa /24 se poate imparti in 2 subclase de 256 IP.-False

10.192.168.1.155 face parte din clasa 192.168.1.0/24-True

11.O clasa /24 se poate imparti in 2 subclase /25.-True

12.Clasa 193.231.20.0/24 se poate imparti in 2 subclase de 128 IP.-True

13.192.168.2.155 face parte din clasa 192.168.0.0/22-True

14.O clasa /16 nu se poate imparti in 16 clase /20-False

15.O clasa /24 se poate imparti in 3 subclase /26-True

16.192.168.1.155 face parte din clasa 192.168.1.0/25-False

17.192.168.1.155 face parte din clasa 192.168.0.0/24-False

18.O clasa /8 se poate imparti in 4 clase /10-True

19.Clasa 193.231.20.0/24 se poate imparti in 3 subclase de 128 IP-False

20.192.168.0.2/24 si 192.168.1.6/24 fac parte din aceasi retea-False

21.O clasa /16 se poate imparti in 16 clase /20-True

22.192.168.0.2/23 si 192.168.1.6/23 fac parte din aceasi retea-True

23.O clasa /24 se poate imparti in 3 subclase /25-False

24.192.168.1.155 face parte din clasa 192.168.0.0/23-True

25.O clasa /24 se poate imparti in 2 subclase de 512 IP.-False

26.O clasa /8 se poate imparti in 4 clase /9.-False

1.Adresa de subretea pentru statia cu adresa IP 192.120.0.1/16 este 192.120.0.1-False

2.Adresa de subretea pentru statia cu adresa IP 192.120.0.1/16 este 192.120.0.0-True

#Anonim

1.

2.Nu pot exista calculatoare cu adresa 192.168.1.0-False

3.Placa de retea functioneaza ca interfata fizica între calculator si cablul de retea-False

4.LAN este o retea globala-False

5.LAN nu este o retea globala-True

6.Telefoanele mobile nu se pot conecta la Internet fara placa de retea-True

7.Adresa de subretea pentru statia cu adresa IP 192.120.0.1/16 este 192.120.0.1-False

9.Operatia logica AND între masca si adresa IP are ca rezultat adresa de broadcast-False

10.Adresa IP nu se poate determina pe baza adresei de retea si a netmask-ului-True

11.UDP asteapta confirmarea primirii pachetelor-False

12.Exista si altfel de socketuri decat TCP si UDP-True

13.UDP este mai sigur ca TCP-False

14.Routerele folosesc adrese IP pentru a transmite cadrele catre alte reţele-True

15.Un punct de acces wireless are o raza de acoperire limitata-True

16.Pe un acelasi server web pot fi gazduite mai multe site-uri web-True

17.O adresa IP este un numar binar pe 32 de biti-True

18.Un router se leaga de un calculator cu un cablu Straight-Through-False

19.TCP asteapta confirmarea primirii pachetelor-True

20.O adresa de IP este un identificator unic pentru fiecare calculator într-o retea IP-True

21.Placa de retea nu transmite datele catre alte calculatoare-False

22.Un socket UDP se creeaza cu parametrii AF\_INET and SOCK\_DGRAM-True

23.O adresa de IP este un identificator comun pentru mai multe calculatoare într-o reţea IP-

False

24.Adresa IP se poate determina pe baza adresei de retea si a netmask-ului-False

25.In LAN pot exista mai multe calculatoare cu adresa 192.168.1.1-False

1.Un socket UDP se creeaza cu parametrii AF\_INET si SOCK\_DGRAM-True

2.Un socket TCP se creeaza cu parametrii AF\_INET si SOCK\_DGRAM-False

1.Serviciul DNS ruleaza pe portul TCP 53-False

2.Serviciul DNS ruleaza pe portul UDP 53-True

1.Un socket UDP se creeaza cu parametrii AF\_INET si SOCK\_STREAM-False

2.Un socket TCP se creeaza cu parametrii AF\_INET si SOCK\_STREAM-True

1.HTTPS transmite datele criptat-True

2.HTTP transmite datele criptat-False

1.LAN este o retea globala-False

2.LAN nu este o retea globala-True

1.O placa de retea poate avea o singura adresa IP-False

2.O placa de retea poate avea mai multe adrese IP-True

#Broadcast

1.Adresa 87.35.15.63/26 poate fi adresa de broadcast-True

2.Adresa de broadcast se poate calcula pe baza adresei de retea si a netmask-ului-True

3.Adresa de broadcast se poate determina pe baza adresei IP si a netmask-ului-True

4.Adresa 83.35.15.8/28 poate fi adresa de broadcast-False

5.Adresa 127.0.0.1 nu poate fi adresa de broadcast.-True

6.Adresa de broadcast nu se poate calcula pe baza adresei de retea si a netmask-ului-False

7.Adresa 87.35.15.7/29 poate fi adresa de broadcast-True

8.Adresa de broadcast pentru statia cu adresa IP 192.120.0.1/16 este 192.120.255.255-True

HTTP inseamna Hyperspeed Transfer Protocol -False

O retea cu netmask-ul 255.255.255.0 poate avea maxim 2^8-2=126 calculatoare.-False

Un socket UDP se creeaza cu parametrii AF\_INET and SOCK\_STREAM-False

Adresa 87.35.15.63/25 poate fi adresa de broadcast-False

Un calculator de leaga de un swith cu un cablu Cross-Over-False

Operaţia logica AND între masca şi adresa IP are ca rezultat adresa reţelei-True

Apelul accept() este obligatoriu in orice server UDP-False

HTTP este situat la nivelul Retea-False

Adresa IP nu se poate determina pe baza adresei de retea si a netmask-ului

172.0.0.1 este o adresa IP privata-False

11111111.11111111.11111100.00000000 = 255.255.252.0-True

HTTP inseamna Hypertext Transfer Protocol-True

Placa de reţea funcţioneaza ca interfaţa fizica între calculator şi cablul de reţea-False

Placa de retea poate sa fie si externa-True

O clasa /8 se poate imparti in 4 clase /10.-True

172.31.0.1 este o adresa IP privata-True

Dimensiunea unei retele este 2^n; unde n este numarul de cifre 0 din netmask.-True

Dimensiunea unei retele este 2^n; unde n este numarul de cifre 1 din netmask-False

Topologia de tip Bus consta; dintr-un singur cablu; care conecteaza in serie; toate calculatoarele din

retea-True

Doua calculatoare din Internet nu pot sa aiba sub nici o forma aceeasi adresa IP-True

Adresa 43.29.45.132/27 poate fi adresa de retea-False

Doua calculatoare plasate in aceeasi retea atat din punct de vedere fizic cat si logic pot avea default Sgateway-uri diferite - TRUE

Adresa de broadcast nu se poate determina pe baza adresei IP si a netmask-ului – FALSE

LAN nu reprezinta un acronim pentru: Limited Area Network – TRUE

172.0.0.1 nu este o adresa IP private – True

INTREBARI PROPUSE

1 Q: Which is the Port number used by Network Time Protocol (NTP) with UDP?

**A: 123**

Network Time Protocol (NTP) is a protocol that helps the computers clock times to be synchronized in a network.

2 Q: Considering the OSI Ref. Model, what’s the first layer where we can talk about IP protocol?

**A: The Network Layer**

Data link is with mac and physicla is with wires

3 Q: What’s the minimum number of interfaces a router should have?

**A: It should have a minimum of 2 interfaces.**

LAN and WAN (wide area network)

4 Q: What is a solution for “Flat Addressing”?

**A: Classfull IP Addressing and CIDR**

Flat Adrressing - Flat address space is used in 32-bit computing to address space up to 4 gigabytes (GB).

Classfull IP – Classful addressing is an IPv4 addressing architecture that divides addresses into five groups: class A,B,C,D,E.

Classless - Classless addressing is an IPv4 addressing architecture that uses variable-length subnet masking.

5 Q: How many networks can we have in the Class A of ip addressing?

28

**A: = 256 networks**

**Eu zic ca aici e gresit si trb 128-2=126.**

6 Q: Consider a block with 32 addresses. Can it begin with 193.226.40.96?

**A: Yes**, 96%32 == 0

96 = 0110 0000

32 = 2^5

64 = 2^6 (pt 0100 0000 = 64, 1000 0000 = 128, 1100 0000 = 192)

spre ex: am ip 193.226.40.0 ...pot avea un block cu 512 ips? (512 ins 2^9, ceea ce ins ca imi trebuie minim 9 zero uri....primii 8 sunt 0, iar 40 se scrie ca 0010 1000, deci am inca 3 de 0. ceea ce ins ca pot baga si 512, si 1028(2^10), si 2048(2^11) dar atat)

7 Q: What is the net mask (natural net mask) that we use to represent class B?

**A: 255.255.0.0**

(class B uses 2 bytes for the Network part, hence we tell the net mask to reserve  2 bytes)

8 Q: Consider the following network address: 192.0.2.64 . How many net masks can it be used  with?

**A: 5** (/30 /29 /28 /27 /26)

/30 means 4ips. 64%4=0

/29 means 8ips. 64%8=0

/28 means 16ips. 64%16=0

/27 means 32ips.

/26 means 64ips.

9 Q: Pick class B. Which of the following answers are correct?

We can divide class B into?:

    a) 7 sub networks each of 8192 addresses

**b) 2^16 sub networks**

**c) 8 sub networks each of 8190 addresses**

    d) 8 sub networks each of 8192 addresses

 A: b) and c)

b) eu zic ca e 2^14...

c)

The first 2 bytes are reserved for the network, so we are left with 2^16addresses(adica eu pot sa impart asa: din 16 bits ramasi, sa am 1bit subnetworks si 15bitsi hosts, sa am 2bits subnetworks si 14bits hosts, 2bits subnetworks si 13 bits hosts ....). We can split them into 2^3 subnetworks, each with 2^13 addresses,

8192 = 2^13

8192 – 2 = 8190 host addresses

10 Q: You are given the following ip address 225.9.130.0/24. You need the following No of  computers: N1 104, N2 80, N3 40, N4 24, N5 8;

 Can this be done using only the /24 net mask?

 A: With /24 we have exactly 256 spare addresses. **The answer is no.**

**104 <** 128

80 < 128

Already 256. So no.

1. In TCP paradigm, which of the following system calls are blocking calls?

**a. accept()**

b. bind()

**c. connect()**

d. all of the above

Accept a connection with the accept() function system call. This call typically blocks until a client connects with the server. connect() on a TCP socket is a blocking operation unless the socket descriptor is put into non-blocking mode

2. In TCP communication, what represents the value returned from the “listen()” system call?

a. The number of all incoming connections

b. The number of all connections that arrive at the same time

**c. 0, if the call is successful, negative value if there is an error**

d. None of the above

3. In TCP communication, what is the function call that changes the value of the port from the socket on which the call is made with a value on purpose?

**a. bind()**

b. accept()

c. socket()

d. connect()

4.

In TCP communication, which of the following system calls are common to both server and client?

**close, bind, socket , send , receive**

tcp client application calls: socket(), bind(), connect(), send(), receive(), close()

tcp server application calls: socket(), bind(), listen(), accept(), receive(), send(), close()

5. Which of the following is not a sever type?

**Shared state server**

An iterative server iterates through each client, handling it one at a time(without fork basically). A concurrent server handles multiple clients at the same time(with fork).

6. Which of the following two communications protocols guarantees data delivery?

a. IP

b. **TCP**

c. UDP

d. ARP

IP e unreliable, ARP foloseste broadcasting(udp).

7. Which of the following two communications protocols guarantees data ordering delivery?

a. IP

b. **TCP**

c. UDP

d. ARP

8. Which of the following implementations of a concurrent TCP server have interdependent states between clients?

a. Fork/Procceses

**b. Threads**

c. Select system call

d. None of the above

-Workflow interdependence is the term used when multiple work processes rely on or collaborate with each other to accomplish duties or output a product.

**-Threads are not independent of one another like processes** are, and as a result threads share with other threads their code section, data section, and OS resources (like open files and signals).

-The select() system call tells you whether there is any data to read on the file descriptors that you're interested in (era ala de iterai prin fiecare si puteai sa citesti si de la tastatura si din fisier, era din anul trecut).

9. Which of the following statements are true?

a. TCP sockets are based on messages, and not on connection

b. **UDP sockets are based on messages, and not on connection**

c. In UDP communication, after a client has been connected, between it and the server a continuous communication channel stays active, until one of them close the connection

d. None of the above

10. What is the main function of DHCP?

a. transfer files between different platforms

b. provides network connectivity to a computer

**c. automatically assigns IP addresses to the devices across the network**

d. none of the above

11. Which of the following communications protocol does the DHCP use as the Transport Layer? 

**UDP**

12. Which of the following statements are true for Classless InterDomain Routing?

**a. The number of addresses in each block must be a power of 2**

b. The RIPv1 supports CIDR

**c. It is allowed to use discontiguous network**

d. It is not allowed to a use a variable length mask

13. Which of the following network components broadcasts the message to all the network?

a. router

b. switch

**c. hub**

d. DHCP server

14. Which of the following system calls are optional at the level of a TCP client:

a. socket()

b. listen()

c. connect()

d. none of the above

15. What type of connection does SOCK\_STREAM indicate?

**a. TCP connection**

b. UDP connection

c. Closed connection

d. Open connection

16. Which of the addresses are valid private addresses?

**a. 10.255.189.255**

**b. 192.168.255.0**

c. 172.168.10.0

**d. 172.16.10.0**

Address ranges to be use by private networks are:

Class A: 10.0.0.0 to 10.255.255.255 (10.0.0.0/8)

Class B: 172.16.0.0 to 172.31.255.255 (172.16.0.0/12)

Class C: 192.168.0.0 to 192.168.255.255 (192.168.0.0/16)

17. Which of the following is a valid IP netmask combination?

a. 168.220.186.8/225.255.255.192

**b. 156.186.192.8/255.255.255.252**

c. 89.56.43.192/255.255.255.0

**d. 7.68.3.128/255.255.255.192**

a. 256-192 = 64

8%64!=0

b.256-252 = 4

8%4==0

c. 256-0=256

192%256!=0

d. 256-192=66

128%64==0

18. The maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.240 subnet mask is:

a. 16

b. 8

**c. 14**

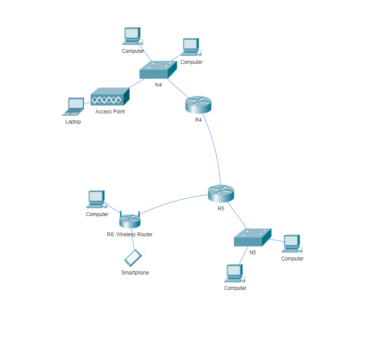
d. 30

e. None

256-240=16. Dar zice hosts => 16-NA-BA=14hosts

255.255.254.0 => 9 zerouri => 2^9-2 hosts

19. How many subsets are in the given diagram:



a. 2

b. 3

c. 4

**d. 5**

20. Which of the following are not contained by a routing table?

a. interface

b. netmask

**c. source address**

d. gateway

1. What is the loopback address?

**A: 127.0.0.1**

2. TCP belongs to the

a) Application Layer

**b) Transport Layer**

c) Internet Layer

d) Network Interface Layer

3. In C, while creating a TCP socket, SOCK\_STREAM is used

**True** / False

4. TCP means

**a) Transmission Control Protocol**

b) Transit Chanel Protocol

c) Text Coupled Protocol

d) Telephony Control Protocol

5. A wireless device can be connected to the network through a router

True / **False**

6. IP/RIP is a distance-vector routing protocol

**True** / False

A distance-vector routing protocol in data networks determines the best route for data packets based on distance.

7. DHCP can be set up on a router

**True** / False

8. 192.168.0.101 is of class

a) A

b) B

**c) C**

d) D

9. The default hostname for the address 127.0.0.1 is :

**localhost**

10. IPV6 uses

**a) 128 bits**

b) 32 bits

**c) 16 bytes**

d) 4 bytes

2031:0000:130F:0000:0000:09C0:876A:130B

O adresă IPv6 are 128 de biți, reprezentați ca 8 grupuri de 4 cifre hexazecimale separate prin două puncte

1. What are the corresponding OSI Reference Model layers to the Application layer of the TCP/IP Reference Model:

a) Application layer

b) Presentation layer

c) Application and presentation layers

**d) Application, presentation and session layers**

2. Which is a true end-to-end layer in the OSI Reference Model

a) Data link layer

**b) Transport layer**

c) Network layer

d) Physical layer

3. Which OSI Reference Model can be thought of as the one that maps bits to a certain signal:

a) Data link layer

**b) Physical layer**

c) Transport layer

d) Session layer

4. The 802.13 IEEE standard is used for:

a) Ethernet

b) Wireless LANs

c) Bluetooth

**d) it is unused**

<https://en.wikipedia.org/wiki/IEEE_802>

5. Select and Poll system calls are used in which of the following I/O Modes:

a) blocking I/O

b) nonblocking I/O

**c) I/O multiplexing**

d) asynchronous I/O

6. What protocol handles moving a datagram from source to destination?

a) RIP

**b) IPv4/IPV6**

**c) internet protocol**

d) PIM

The IP protocol in the network layer delivers a datagram from a source host to the destination host.

7. What is the minimum number of addresses from a B class of the classful addressing?

a) 255

**b) 257**

c) 2000

d) 128

in clasa C incape maxim 256 addresses (nu zice host addr, zice doar addresses). Deci orice de la 257 in sus poate fi trecut la B.

8. The following is the true about NAT:

a) ISP is not affected by changes in local networks (changes that concern device’s addresses)

b) addresses in local network are not affected by changes in ISP

c) devices inside local network are not explicitly addressable

**d) all of the above**

9. An ISP has 4 organizations with networks:

N0: 200.23.16.0/24

N1: 200.23.17.0/24

N2: 200.23.18.0/24

N3: 200.23.19.0/24

If we supernet the organizations we will get:

a) 200.23.19.0/25

b) 200.23.16.0/20

**c) 200.23.16.0/22**

d) 200.23.20.0/24

10. TTL defines:

a) the type of service an IP Datagram is

**b) the number of routers the packet can pass**

c) the actual data inside the datagram

d) none of the above

1) The maximum length (in bytes) of an IPv4 datagram is?

a) 32

b) 1024

**c) 65535**

d) 512

2) The IP network 192.168.50.0 is to be divided into 10 equal sized subnets. Which of the following subnet masks can be used for the above requirement?

a) 255.255.243.240

b) 255.255.0.0

**c) 255.255.255.0**

d) 255.255.255.255

This address belongs to class C, so 8 bits are reserved for the host ID. 24 bits are reserved for network ID.

3) Which of the following addresses belong to class A?

**a) 121.12.12.248**

b) 130.12.12.248

c) 128.12.12.248

d) 129.12.12.248

4) What IP address class allocates 8 bits for the host identification part?

a) Class A

b) Class B

**c) Class C**

d) Class D

5) The physical layer translates logical communication requests from the \_\_\_\_\_\_ into hardware specific operations.

**a) data link layer**

b) network layer

c) transport layer

d) application layer

6) The Internet Protocol:

**a) deals with moving a datagram from source to destination**

**b) has the task of delivering packets from the source host to the destination**

**c) has a routing function**

d) none of the above

7) Transport layer protocols deals with \_\_\_\_\_\_\_\_\_\_\_\_

a) application to application communication

**b) process to process communication**

c) node to node communication

d) man to man communication

8) Write in decimal dotted notation /28:

Answer: **255.255.255.240**

9) OSI Model does not have seven layers.

a) True

**b) False**

10) Header of a frame generally contains:

**a) destination address**

**b) source address**

c) the message to be delivered

**d) ack field**

Frame Header

A frame header contains the destination address, the source address and three control fields:

- kind: This field states whether the frame is a data frame or it is used for control functions like error and flow control or link management etc.

- seq: This contains the sequence number of the frame for rearrangement of out – of – sequence frames and sending acknowledgments by the receiver.

- ack: This contains the acknowledgment number of some frame, particularly when piggybacking is used.

1.With TCP, one party can overflow the other

a) True

**b) False**

2.The listen system call is normally called by the client process in order to connect to read from a server

a) True

**b) False**

3.The recvfrom system call returns the source socket

**a) True**

b) False

4.Find the maximum number of subnets in which can we split the network 3.4.5.0/24 such that addresses 3.4.5.192 and 3.4.5.248 would be in the same subnet.

a) 4

b) 2

**c) 49**

d) 50

/24 => 2^8 ips = 256

cate ip uri sunt de la .192 la .248 .... si calculez asta: 248-192+1 = 55 + 2(BA, NA) = 57 < 64. (deci un subnet cu 64ips, restul sa fie de cate cea mai mica marime posibila, adica 4ips(/30))

256-64=192 ip-uri ramase

192/4=48subneturi de cate 4 ip uri fiecare

48 (subnets de cate 4 ip uri) + 1 (subnet de 64 ip uri) = 49 subnets.

5.What layer from the OSI model has frames as data units?

a) Transport layer

b) Network layer

**c) Datalink layer**

d) Physical layer

6.The natural mask for a class E address is :

a) 255.255.255.0

b) 255.255.0.0

c) 0.0.0.0

**d) None of the above**

7. How long is an IPv6 address?

a) 4 bytes

b) 32 bytes

**c) 16 bytes**

d) 8 bytes

8. What command would you use to test the Datalink Layer to see if it works (on Windows)?

**a) arp /a**

b) ipconfig /all

c) ifconfig

d) arp /d

9. Which of the following is a valid IP/Netmask combination?

**a) 209.220.186.16/255.255.255.240**

b) 209.220.186.9/255.255.255.0

**c) 209.220.186.8/255.255.255.248**

d) 209.220.186.10/255.255.255.252

10. What is a characteristic of a transport that encourages use of UDP?

**a) need for low latency**

b) data loss needs to be avoided

**c) bandwidth-intensive transport**

d) none of the above

a ->low latency = intarziere mica

c -> bandwidth = viteza de transfer de date, bandwidth intensive = viteza mare

11. What is HTML?

a) HTML is a language used for server programming.

b) HTML is a language used for browser programming.

**c) HTML is a langauge that is used to describe web pages.**

d) HTML is a protocol used by web pages.

12. What is the in-memory representation of 12FE4h in little endian? (on 3 bytes)

a) E42F10

b) 4EF201

**c) E42F01**

d) 012FE4

13. For error detection in TCP/IP we use?

a) Bit sum

**b) Check sum**

c) Error Flag

d) Error bit

15. How many bits are reserved for the fragment offset in an IP Datagram?

a) 12

**b) 13**

c) 16

d) 8

<https://packetpushers.net/ip-fragmentation-in-detail/>

16. ARP can be used for :

**a) Mapping network addresses to physical addresses**

b) Mapping public virtual addresses to private ip addresses

c) Publishing websites to the internet

d) Sending pings very fast over the local (physical) network

17.What is the data unit of a TCP connection?

a) datagram

b) packet

**c) stream**

d) letter

18.Which of the following is not done by TCP?

a) delivery confirmation

b) flux control

**c) broadcasting**

d) keeping the order of the bytes sent

1. In the layer hierarchy as the data packet moves from the upper to the lower layers, headers are \_\_\_\_\_\_\_\_

**A) added**

B) removed

C) rearranged

D) modified

2. A \_\_\_\_ is the physical path over which a message travels.

A) Path

**B) Medium**

C) Protocol

D) Route

3. Which of this is not a network edge device?

A) PC

B) Smartphones

C) Servers

**D) Switch**

Edge ins ca se refera la margine, adica nu mai legi alte chestii la el care sa continuie networkul.

Network egde devices refer to host systems, which can host applications like web browser.

4. A \_\_\_\_ is a set of rules that governs data communication.

**A) Protocol**

B) Standard

C) RFC

D) Server

5. Three or more devices share a link in \_\_\_\_ connection.

A) Unipoint

**B) Multipoint**

C) Point to point

D) Simplex

- nu gasesc la unipoint

- The multipoint connection is a connection established between more than two devices

- Point-to-point connection refers to a communications connection between two communication endpoints or nodes

- Simplex communication is a communication channel that sends information in one direction only.

6. Two devices are in the same network if \_\_\_\_ :

**A) A process in one device is able to exchange information with the process in another device**

B) a process is running on both devices

C) PIDs of the processes running on different devices are the same

D) a process is active and another is inactive

7. In a computer network, a node is:

A) the computer that originates the data

B) the computer that routes the data

C) the computer that terminates the data

**D) all of the mentioned**

8. Communication channel is shared by all the machines on the network in \_\_\_

**A) broadcast network**

B) unicast network

C) multicast network

D) anycast network

9. A \_\_\_\_\_ is a device that forwards packets between networks by processing the routing information included in the packet.

A) bridge

B) firewall

**C) router**

D) hub

https://www.geeksforgeeks.org/network-devices-hub-repeater-bridge-switch-router-gateways/

10.Network congestion occurs \_\_\_\_:

**A) in case of traffic overloading**

B) when a system terminates

C) when connection between two nodes terminates

D) in case of transfer failure

11.How many layers are present in the OSI model?

A) 5

**B) 7**

C) 6

D) 10

12. OSI stands for \_\_\_

**A) open system interconnection**

B) operating system interface

C) optical service implementation

D) open service Internet

13.Which address is used on the internet for employing the TCP/IP protocols?

A) physical address and logical address

B) port address

C) specific address

**D) all of the mentioned**

<https://www.ques10.com/p/21477/discuss-the-different-types-of-addresses-used-in-t/>

14. Data communication system within a building or campus is \_\_\_:

**A) LAN**

B) WAN

C) MAN

D) PAN

<https://www.securityinfowatch.com/video-surveillance/blog/10475171/pans-lans-mans-wans>

15.A local telephone network is an example of a \_\_\_\_ network.

A) packet switched

**B) circuit switched**

C) bit switched

D) line switched

16. Which of the following is false with respect to TCP?

A) connection-oriented

B) process-to-process

C) transport layer protocol

**D) unreliable**

17.In TCP, sending and receiving data is done as \_\_\_

**A) stream of bytes**

B) sequence of characters

C) lines of data

D) packets

18. To achieve reliable transport in TCP, \_\_\_\_\_ is used to check the safe and sound arrival of data.

A) packet

B) buffer

C) segment

**D) acknowledgment**

19. The value of acknowledgement field in a segment defines \_\_\_\_\_:

A) sequence number of the byte received previously

B) total number of bytes to receive

**C) sequence number of the next byte to be received**

D) sequence of zeros and ones

20. What allows TCP to detect lost segments and in turn recover from that loss?

A) sequence number

**B) acknowledgement number**

C) checksum

D) both sequence and acknowledgement number

The seq number is sent by the TCP client, indicating how much data has been sent for the session (also known as the byte-order number). The ack number is sent by the TCP server, indicating that is has received cumulated data and is ready for the next segment.

21.During error reporting, ICMP always reports error messages to \_\_\_\_:

A) destination

**B) source**

C) next router

D) previous router

22. During debugging, we can use the\_\_\_ program to find if a host is alive and responding.

A) traceroute

B) shell

**C) ping**

D) java

23. In windows, \_\_\_\_\_ can be used to trace the route of the packet from the source to the destination.

A) traceroute

**B) tracert**

C) ping

D) locater

24. Which field helps to check rearrangement of the fragments?

**A) offset**

B) flag

C) TTL

D) identifier

The Fragment Offset field specifies where the fragment fits in the original datagram.

25. Two connected routers are configured with RIP routing. What will be the result when a router received a routing update that contains a higher-cost path to a network already in its routing table?

A) the updated information will be added to the existing routing table

**B) the update will be ignored and no further action will occur**

C) the updated information will replace the existing routing table entry

D) the existing routing table entry will be deleted from the routing table and

all routers will exchange routing updates to reach convergence

26. Network layer firewall works as a \_\_\_:

A) frame filter

**B) packet filter**

C) content filter

D) virus filter

27. ICMP is used in \_\_\_:

A) ping

B) traceroute

C) ifconfig

**D) ping and traceroute**

28.What is an access point in a wireless LAN?

**A) device that allows wireless devices to connect to a wired network**

B) wireless devices itself

C) both device that allows wireless devices to connect to a wired network and wireless devices itself

D) all the nodes in the network

29. To join the internet, the computer has to be connected to a\_\_\_\_

A) internet architecture board

B) internet society

**C) internet service provider**

D) different computer

30.Which protocol assigns IP address to the client connected in the internet?

**A) DHCP**

B) IP

C) RPC

D) RSVP

1.In case three duplicate acks are received

**a) congestion is present, the congestion window is cut in half and grows linearly**

b) congestion is not present

c) congestion is present, the congestion window is cut in half and grows exponentially

d) congestion is present, the congestion window is set to 1 and grows linearly

2.In the TCP Slow Start mechanism, the rate is given by

a) RTT / CongWinSize (Sec / Bytes)

b) RTT / CongWinSize (Sec / Bits)

**c) CongWinSize / RTT (Bytes / Sec)**

d) CongWinSize / RTT (Bits / Sec)

3. RIP represents a

a) centralized static routing mechanism

b) centralized dynamic routing mechanism

c) decentralized static routing mechanism

**d) decentralized dynamic routing mechanism**

4.The SOA header of a DNS record contains the following entries:

**a) serial no, refresh interval, update entry, expiry, minimum or TTL**

b) serial no, ack id, update entry, expiry, maximum or TTL

c) serial no, copy pointer, update entry, retirement, urgent pointer

d) serial no, ip address, port, message length, message

[**https://www.cloudflare.com/learning/dns/dns-records/dns-soa-record/**](https://www.cloudflare.com/learning/dns/dns-records/dns-soa-record/)

5.SMTP is

**a) an offline protocol**

**b) built on top of TCP**

c) built on top of UDP

**d) on the same level as FTP, HTTP and DNS**

6.If the client requires multiple files, FTP provides

a) a control connection and a data connection for each request

**b) a control connection and multiple data connections**

c) multiple control connections and one data connection

d) none of the above

7.If a DNS Server is not authoritative for a host name, then the server will contain a Type NS record for the domain that includes the hostname, and also a Type \_\_\_ record that provides the IP address of the DNS Server in the Value field of the NS record. (**A**)

8.The Select statement will select a readable socket when

**a) there is data to be read on that socket**

**b) a new connection was established (socket was in listening mode)**

c) enough space is available for writing

**d) there is an error pending**

9.When a new client connects to a network with DHCP, the following steps will be taken by the DHCP protocol

**a) DHCP Server Discovery, DHCP Server Offer(s), DHCP Request, DHCP Ack**

b) DHCP Request, DHCP Server Discovery, DHCP Server Offer(s), DHCP Ack

c) DHCP Server Discovery, DHCP Request, DHCP Ack, DHCP Server Offer(s)

d) DHCP Server Offer(s), DHCP Server Discovery, DHCP Request, DHCP Ack

10.IPv4 address 127.0.0.1

a) can not be a broadcast address because it is a private address

**b) can not be a broadcast address because there is no usable network that can end with that address**

c) can be a broadcast address

d) can not be a broadcast address because the last bit is odd

11.If a DNS Server is authoritative for a given host name, then the DNS Server will contain a

**a) type A record**

b) type NS record and type SOA record

c) type CNAME record

d) type MX record

12.One difference between HTTP and SMTP is that

a) one is built over TCP and the other over UDP

**b) HTTP is a pull protocol while SMTP is a push protocol**

c) HTTP is a push protocol while SMTP is a pull protocol

d) HTTP requires data to be in 7-bit ASCII format, while SMTP does not

13.Consider two organizations each with their own mail servers (S1 and S2 respectively). User A belongs to the first organization and user B to the second. A sends a mail to B. The following process takes place

a) A's user agent sends the mail to S2's queue, S2 sends the message to recipient B

b) A can not send a mail to B since they belong to different organizations

**c) A's user agent sends the mail to S1's queue, S1 sends the message to S2's queue, recipient B requests the mail from S2 using POP3 or IMAP Protocols**

d) A's user agent sends the mail to S1's queue, S1 sends the message to S2's queue, S2 sends the message to recipient B

1. What protocols use UDP?

a. ARP

b. FTP

c. SSH

**d. DNS**

2. What does a /25 mask mean?

a. 255.255.255.192

**b. 255.255.255.128**

**c. 128 hosts**

d. 256 hosts

3. Which elements are on the network level on TCP/IP stack?

a. UDP

**b. Router**

**c. IP address**

d. Switch

Switch is datalink. udp is transport.

4. Which of the following represents a private IP address?

**a. 192.168.0.1 /24**

b. 192.169.1.0 /24

c. 220.150.0.1 /16

**d. 172.25.3.4 /16**

5. On which part of the TCP/IP stack is the Wi-fi placed?

a. Network

b. Application

**c. Data Link**

d. Transport

6. What is the default gateway for this network address 172.30.0.0 /255.255.0.0?

a. 172.30.255.255

b. 172.30.255.254

**c. 172.30.0.1**

d. 172.30.0.0

7. Which of the following are correct if you look at the TCP/IP stack in descending order?

a. DNS, UDP, FTP, TCP, IP address, Router, Switch, Hub, UTP cable

b. DNS, FTP, Router, UDP, TCP, IP address, Switch, Hub, UTP cable

**c. DNS, FTP, UDP, TCP, IP address, Router, Switch, Hub, UTP cable**

d. DNS, UDP, TCP, IP address, Router, Switch, Hub, UTP cable, FTP

8. Which one is correct for to UDP/TCP protocols?

**a. UDP is faster than TCP**

b. TCP can lose data

c. UDP verifies the packages

d. TCP is used for broadcasting

9. Which one is correct for a MAC address?

**a. They have 6 bytes**

b. F2.13.E5.46.59.80.A3.12 is a valid MAC address

c. They have 8 bytes

**d. D2.12.A3.44.10.C1 is a valid MAC address**

10. Which of the following traffic types are valid?

**a. Unicast**

**b. Multicast**

c. Dual-traffic

11. What information about Switches and Hubs are correct?

a. Hubs have processors and memory

**b. Switches are “smarter” than Hubs**

**c. With Hubs there still are collisions**

d. With Switches there still are collisions

12 When do we use sendto?

a. With TCP

**b. With UDP**

1. what is the name of the ip address 255.255.255.255 ?

**a) universal broadcast;**

b) global broadcast

c) worldwide broadcast

d) general broadcast

2. what is the metric of a route when the destination is in the same network ?

(correct = 1)

3. which of the following messages are transmited via ICMP ?

a) no memory left;

b) destination host undefined;

**c) destination host unreachable;**

**d) bad IP header**

4. what does the abbreviation ICANN stand for ?

a) International Corporation for Allocating Names and Numbers

b) I CAN

**c) Internet Corporation for Assigned Names and Numbers**

d) Interactive Communication Among Network Names

5. what's the primary port on which SMTP works ?

(correct = 25)

6. which of the following are DNS resource record types ?

**a) SOA = start of authority**

b) MS = mail server

**c) MX = mail exchange**

d) RNAME = canonical (real) name

[**https://simpledns.plus/help/dns-record-types**](https://simpledns.plus/help/dns-record-types)

7. what is the query that checks whether a domain name is already bought ?

a) there is no such thing

**b) WHOIS**

c) ISOPEN

d) WHOWNS

8. what is the number of duplicate acknowledgements that indicates a congested network ? (correct = 3)

9. how many bits do the flags occupy in the TCP header ?

(correct = 6). Eu am gasit 9, nu 6.

10. what is the main reason why DNS servers should be situated in different places (geographically) ?

a) because the domain costs are cheaper

**b) because if one of them fails due to a natural disaster, the others are not be affected**

c) because each will serve the requests coming from its own region, so the total computational cost is divided

d) there is no such requirement

https://www.securityweek.com/content/dont-let-dns-be-your-single-point-failure

1) A socket is:

**a) an OS-controlled interface**

b) a hardware part of the network

**c) a „door” to send and receive messages to/from processes**

d) a Data link layer protocol

2) In the UDP API:

**a) „sendto” is used to send datagrams**

b) Type = SOCK\_STREAM when creating a socket

c) the client must connect to the server

**d) one party can overflow the other**

3) MAC address:

a) is not a hardware address

**b) comes from „media access control”**

c) is represented on 56 bits

d) belongs to the Network layer

4) Straight-Through cables should be used on:

a) switch to hub connection

b) server to PC connection

**c) hub to server connection**

**d) switch to router connection**

5) What is the range of host IPs in which the next IP belongs: 87.87.87.85/29 ?

a) 87.87.87.80 – 87.87.87.86

**b) 87.87.87.81 – 87.87.87.86**

c) 87.87.87.81 - 87.87.87.94

d) 87.87.87.81 - 87.87.87.85

/29 means 32-29=3 => 2^3 addresses which means 8-2=6 hosts.

a) can’t be because the range has 7 addresses AND the broadcast would be .79 which is not divizible by 8. d) and c) also don’t have 6 addresses in the range.

6) Some protocols of the Application Layer are:

**a) HTTP**

b) TCP

c) ARP

**d) Bitcoin**

<https://bitcoin.stackexchange.com/questions/83410/blockchain-and-iso-osi>

7) A DNS Server translates IP addresses to domain names:

a) True

**b) False**

domain to IP

8) For RIPv2:

a) it supports only class full networks

b) does not provide trigger updates

**c) it’s hop count limit is 15**

**d) it is configured on the router**

Triggered updates allow a RIP router to announce changes in metric values almost immediately rather than waiting for the next periodic announcement. The trigger is a change to a metric in an entry in the routing table.

9) The ARP Procol is used to discover the MAC address associated with a given IP address:

**a) True**

b) False

10) The broadcast address of 121.124.35.0/28 is:

a) 121.124.35.28

**b) 121.124.35.15**

c) 121.124.35.16

d) 121.124.35.31

/28 means 32-28=4 => 2^4=16 ips

.0 + 16-1= .15

11) The Traceroute tool uses IP TTL to trace packet paths:

**a) True**

b) False

<https://support.microsoft.com/en-us/topic/how-to-use-tracert-to-troubleshoot-tcp-ip-problems-in-windows-e643d72b-2f4f-cdd6-09a0-fd2989c7ca8e>

1. Which one is true about Trunk Links?

a) They connect the end devices to the first switch or router;

**b) They connect switches to switches;**

**c) They have a bigger capacity than access links;**

d) They cannot be made out of optical fiber;

<https://support.huawei.com/enterprise/en/doc/EDOC1100088114>

2. What does a mask /29 mean?

a) The maximum number of IP addresses that can be assigned to hosts is 29;

b) The maximum number of IP addresses that can be assigned to hosts is 8;

**c) The maximum number of IP addresses that can be assigned to hosts is 6;**

d) Is equivalent to 255.255.255.252;

/29 means 32-29=3 => 2^3 = 8 ips => 6hosts

/29 = .256-8 = .248 not .252

3. In the TCP Programming API, the socket function call needs as one of the parameters:

**a) The family of the socket;**

b) The local IP;

c) A port;

**d) The type of the socket;**

socketO. SOCKETsocket (int af,int type,int protocol); The socket function is used to create a new socket descriptor. It takes three arguments: the address family of the socket to be created, the type of socket to be created, and the protocol to be used with the socket.

4. Which one is not part of the OSI Reference Model?

a) Physical Layer;

**b) Network Access Layer;**

c) Network Layer;

d) Session Layer;

5. Which one is a characteristic of the Data Link Layer?

**a) Turns the raw transmission into an error free communication line;**

b) Defines rules about data representation;

c) Controls the operation of a subnet;

d) It is a true end to end layer;

c) network

d) -> transport layer

6. FTP is a protocol that is part of the:

a) Physical Layer;

b) Data Link Layer;

c) Transport Layer;

**d) Application Layer;**

7. In Classful Addressing, the address 128.0.0.0 is the lower bound of:

a) Class A;

**b) Class B;**

c) Class C;

d) Class D;

8. In the TCP 3 way handshake process:

**a) In the first step the client sends a segment with SYN to the server;**

b) In the first step the client sends a segment with ACK to the server;

c) In the second step the client acknowledges the response of the server;

**d) In the third step the server receives from the client a segment with Ack= server\_isn + 1;**

9. DNS resource records contain:

a) Host Name;

**b) Domain Name;**

**c) Time to Live;**

d) Flags;

10. Given the ip address 137.25.29.0 and the mask 255.255.254.0, what is the maximum number of subnets?

a) 512;

b) 510;

**c) 128;**

d) 126

.254.0 => 512ips. 512/4=128.

1. In which application(s) is data loss tolerated?

a. file transfer

**b. real-time audio**

c. instant messaging

**d. interactive games**

2. Which statements are true about the TCP protocol? (a, c, d)

**a. data delivery is guaranteed**

b. data ordering delivery is not guaranteed

**c. uses SOCK\_STREAM when creating a socket**

**d. data ordering delivery is guaranteed**

3. accept() call is used in the:

**a. TCP server**

b. UDP server

c. TCP client

d. UDP client

4. How many layers does the OSI Reference Model have?

a. 5

b. 6

**c. 7**

d. 4

5. TCP, UDP are in the:

a. Network Layer

**b. Transport Layer**

c. Session Layer

d. Presentation Layer

6. How many bits of 0 are in the following netmask? 255.255.255.254

**a. 1 bit**

b. 7 bits

c. 4 bits

d. 2 bits

7. Which of the following is a Natural Mask?

a. 255.255.255.128

**b. 255.255.0.0**

c. 255.255.0.32

d. 255.255.255.100

8. How can the network address be computed using the mask and an IP address from the network?

a. compute OR between the mask and the IP address

**b. compute AND between the mask and the IP address**

c. add the mask and the IP address

d. subtract the IP address from the mask

9. In which cases is SOCK\_DGRAM used?

**a. UDP connection**

b. TCP connection

c. both TCP and UDP connections

d. None of the above

10. When using UDP, the bytes which are not read:

**a. are lost**

b. are available for next read calls

c. stay on the stream

d. throw an error

1) The Select system call returns:

**a) -1 on error**

b) 0 on error

**c) 0 if timeout**

**d) positive count of ready descriptors**

<https://man7.org/linux/man-pages/man2/select.2.html>

2)Which of the following interconnection devices don't have Ethernet switches:

a)traffic isolation

b)cut through

c)plug and play

**d)optimal routing**

3)Which layer from the OSI Refference Model handles flow control

a)Aplication

b)Session

c)Presentation

**d)Data Link**

4)Which adress is left out from the Experimental Class

a)240.0.0.0

**b)255.255.255.255**

c)240.240.240.240

d)255.0.0.0

clasa E de la .240 in sus

clasa D de la .224 la .239

5)When is the TCP syn flag set to 1:

**a)at connection request**

b)at connection close

6)Which of the following are advances TCP I/O Models

**a)blocking I/O**

**b)nonblocking I/O**

**c)signal driven I/O**

**d)Asynchronous I/O**

7)Which protocols from the following are not application level protocols

a)HTTP

b)SMTP

c)DNS

**d)RIP**

8)Which port is used for the SMTP Protocol

a)20

b)21

**c)25**

d)26

9)ICMP type for ping

**a)0**

b)4

**c)8**

d)12

<https://www.informit.com/articles/article.aspx?p=26557&seqNum=5>

10)What is Adress Resolution Protocol used for

a)finding the network adress

**b)finding the MAC adress**

c)findig subnet adresses

d)finding resolution

e)finding Nemo

11)A mobile user, passing through multiple access points has

**a)high mobility**

b)low mobility

12)Which of the following are considered DNS design goals

a)Local Control Over Local Resources

b)Distributed Design To Avoid Bottlenecks

c)Application Universality

**d)All of the above**

<http://www.tcpipguide.com/free/t_DNSDesignGoalsObjectivesandAssumptions.htm>

1. What type of link(s) are used to connect switches with one another?

A. Access Link

B. Fiber Link

**C. Trunk Link**

D. High Link

2. Which of the following statements are true about Statistical Multiplexing:

A. Only works in a local area network

**B. Sequence of packets do not have fixed pattern**

C. Inefficient use of resources

**D. Can accommodate bursty traffic**

3. When do we use recv ?

**A. when we use TCP**

B. when we use UDP

4. Which of the following statements are not true about UDP:

A. No guarantee of datagram delivery

D. We use SOCK\_DGRAM when creating the socket

**C. Packets arrive in order**

**D. Smaller payload header than TCP**

5. What principles of the OSI model are true ?

A. A layer should be created where a different abstraction is needed.

B. Each layer should perform a well-defined function.

C. The layer boundaries should be chosen to minimize the information flow across the interfaces. **D. All of the above.**

6. The physical layer transfers raw bits.

A. False

**B. True**

Correct answer: A. True

7. What is the maximum port number?

A. 32768

B. 255

C. 1024

**D. 65535**

8. What is the correct naming configuration?

A. Domain.TLD.HostName

**B. HostName.Domain.TLD**

C. TLD.HostName.Domain

D. HostName.TLD.Domain

E. Domain.HostName.TLD

F. TLD.Domain.HostName

tld = top-level domain (.com ,.ro, .org)

9. Which statements are true about hubs features of interconnection devices?

**A. Cut-through**

**B. Plug and play**

C. Optimal routing

D. Traffic isolation

Correct answer: A and B

10. The maximum number of actual hosts for a class A network is:

A. 16,777,215

**B. 16,777,214**

**C. 2^24 - 2**

D. 2^32 - 2

1. Which of the following statements are not true about the UDP API?

a) It read bytes from one packet

**b) Listen and accept are required**

c) Doesn’t guarantee for datagram delivery or ordering

**d) Bytes not read from the packet stay available for the next read**

2. Which of the following statements about DNS are true?

a) The correct naming configuration is: Domain.HostName.TLD

**b) DNS is an application layer protocol**

c) DNS stands for Dynamic Naming System

**d) A DNS server can be a default getaway**

3. What is the maximum data rate for a 2 kHz channel with binary signals?

4000

4. Which of the following are part of the TCP/IP Model?

**a) Application**

b) Presentation

c) Data Link

d) Physical

5. The natural mask for a class B address is:

a) 255.255.0

b) 255.0.0.0

**c) 255.255.0.0**

d) 255.255.255.0

6. How many bits does the source IP address occupy in the IP Datagram?

a) 64 bits

**b) As many as the destination IP address does**

c) As many as the Header Internet Checksum does

**d) 32 bits**

7. Which statements are true about the SMTP?

a) It allows for online message exchanging

**b) It stands for Simple Mail Transfer Protocol**

**c) It’s server port is 25**

8. Which of the following statements are false about NAT?

**a) It stands for Network Address Transcription**

b) Just one IP address is used for all devices in the local network as seen from the outside world

**c) You need to notify the outside world for any change of address in the local network**

**d) Does not bring any security benefit**

9. ICMP Echo and Reply are used by Ping in order to determine if a host is up

**a) True**

b) False

10. What happens after receiving one duplicate Acknowledgment?

a) Congestion Window is cut in half

b) Congestion Window is set to 1 MSS

c) Congestion Window is doubled

**d) none of the answers are correct**

11. When the Congestion Window is below the Threshold:

a) The window grows linearly

b) The window is set to 1 MSS

**c) The window grows exponentially**

linear creste daca e dupa threshold, e setat la 1 mss daca e timeout(daca asteapta f mult dupa un raspuns),

12. What is the port on which the HTTP works?

R: **80**

13. Which of the following statements about FTP are true?

a) It uses 4 channels: control, data, active, passive

**b) It uses 2 channels: control, data**

c) It uses 2 channels: active, passive

d) It uses 3 channels: control, active, passive

14. Which port(s) are used in the FTP?

**a) Port 20**

b) Port 25

c) Port 30

**d) Port 21**

e) Port 31

15. 127.0.0.1 can be:

a) A network address

b) A broadcast address

**c) Set as default gateway**

d) Set as DNS server

1) Are public WIFIs (ex: wifi from a local pub) using public ip addresses (ie not private ip addresses)?

a) Yes

**b) No**

2) Which statements are true about TCP/IP and TCP?

a) Both are a conceptual model and a set of communications protocols.

b) TCP/IP is composed of only TCP and IP.

**c) TCP/IP is composed of TCP, IP and many more protocols.**

d) TCP/IP is just another name for TCP.

3) Which layer from the OSI Reference Model deals with bit-wise error correction?

a) The Physical layer.

b) The Correction layer.

c) The Network layer.

**d) The Data Link layer.**

4) What is the difference between the commands: "ifconfig" and "ipconfig"?

a) Both are equivalent

**b) "ifconfig" works in a Unix-like OS, whereas "ipconfig" is used in a Windows OS**

c) "ipconfig" works in a Unix-like OS, whereas "ifconfig" is used in a Windows OS

5) How many IPs would the largest Routing Table have if we would use Classful network architecture?

**a) ~2^8 + 2^16 + 2^24 T**

b) ~2^32

c) ~factorial(2^32)

d) ~combinations of 2^32 taken 2

clasa A are 2^24, clasa B are 2^16, clasa C are 2^8;

6) What happends if the Gateway in a Routing table entry is 0.0.0.0?

a) This is not possible

b) All routes will be directed to 0.0.0.0

**c) The router puts the packet on the current network interface**

7) How does a server handle multiple clients on the same port (ex HTTP: port 80)

a) it is not possible

b) by using a UDP connection

**c) the server assigns a new port for each client**

8) What's the smallest possible subnet mask? .... /0 (for 0.0.0.0)

How about the largest possible subnet mask? .... /30

9) What are the first 4 bits of Class E

a) 1000

b) 1100

c) 1110

**d) 1111**

10) What are the the 3 levels of hierarchy of IP Subnet

**a) network, subnet, host portions**

b) network, masks, host portions

**c) host, subnet, network portions**

d) host, masks, network portions

1. About the OSI Model, the following are not true:

**a. The Transport Layer passes the data to the Data Link Layer.**

b. The Data Link Layer takes the packets from the Network Layer and puts the data into frames.

c. The Physical Layer works with raw bits.

**d. The Session Layer handles flow control.**

2. Regarding the TCP Segment, the following are false:

**a. Some of the header fields are: checksum, source IP, acknowledgment number, options.**

**b. The destination IP field contains 16 bits.**

c. The header contains at least 3 flags.

**d. The header contains at most 5 flags.**

**e. The acknowledgment number field deals with flow control.**

a) are source port nu ip.

b) are destination port nu ip + ca ip are 32bits nu 16

d) are 6 flags

3. The following are calls that use DNS:

a. gethostbyport(...)

b. gethostbymac(...)

**c. gethostbyaddr(...)**

d. gethostbyip(...)

**e. getnameinfo(...)**

**f. getaddrinfo(...)**

g. getipinfo(...)

4. Which of the following is not true?

**a. If a sendto() operation returns n bytes, then for sure n bytes will reach destination.**

b. If a send() operation returns n bytes, then for sure n bytes will reach destination.

c. A sendto() call provides no error signaling for undelivered data.

**d. A send() call provides no error signaling for undelivered data.**

**e. A send() operation will be consumed by exactly one recv() operation.**

**f. A sendto() operation will be consumed by exactly one recv() operation.**

5. Regarding the IP Datagram, which of the following is not true?

**a. The header has 14 fields, and they are all required.**

b. The flags field has a size of 3 bits.

c. The checksum field checks the 16 bits parts of the header.

**d. A datagram is discarded when the TTL field reaches value -1.**

**e. If the datagram reaches a smaller MTU than its size and the DF is set to 1, the datagram will be fragmented and MF will be set to 1.**

d) if the TTL field reaches zero before the datagram arrives at its destination

e) mtu = maximum transmission unit. DF means do not fragment the datagram.

The More Fragment bit (MF bit) is set for all the fragment packets except the last one

6. What does ICMP stand for?

a. Internal Classless Mask Protocol

b. Internet Communication Management Protocol

**c. Internet Control Message Protocol**

d. Internet Control Management Protocol

7. During the two-way handshake TCP process:

a. in the first step, the SYN flag is set to 1

b. in the first step, the ACK flag is set to 1

c. in the second step, ACK=client\_isn+1

**d. none of the above**

8. Which of the following is not false, regarding the UDP Datagram?

**a. The checksum field protects both the data and the header section.**

b. The header contains 32 bytes.

c. The header contains 4 fields, of 8 bytes each.

d. In IPv4, the length may exceed, in some cases, 128 Kb.

**e. The minimum length is 8 bytes.**

9. Regarding the TCP/IP Model layers and their specific data exchange units, which of the following is true?

a. UDP Datagrams belong to the Internet Layer

**b. Data Structures belong to the Application Layer**

c. Frames belong to the Internet Layer

d. TCP Segments belong to the Datalink Layer

10. Which is not a natural mask (for classes A,B,C)?

**a. 0.0.0.0**

b. 255.0.0.0

c. 255.255.0.0

d. 255.255.255.0

1.WAN stands for:

-Wireless Area Network

-Wireless Access Network

**-Wide Area Network**

-Wide Access Network

2.HTTP stands for:

-Hypertext tracing protocol

**-Hypertext transfer protocol**

-Hypertext transfer program

-Hyper terminal tracing program

3.DNS stands for:

-Decentralized Network Service

-Domain Network Service

**-Domain Name System**

-Domain Name Service

4.The location of a resource on the internet is given by its?

-Protocol

**-URL**

-E-mail address

-IP address

5.THe maximum length (in bytes) of an IPv4 datagram is?

-32

-1024

**-65535**

-512

6.The IP network 192.168.50.0 is divided into 10 equal sized subnets. Which of the following subnet masks can be used for the above requirement?

-255.243.240

-255.255.0.0

-255.255.0

**-255.255.255.0**

7.The length of an IPv6 address is?

-32 bits

-64 bits

**-128 bits**

-256 bits

8.The application layer of the OSI model is:

-Four layer

-Five layer

-Six layer

**-Seven layer**

9.Each IP packet must contain:

-Only destination address

**-Source and Destination address**

-Source or Destination address

-Only source address

10.Frames from one LAN can be transmitted to another LAN using the device named:

-Router

**-Bridge**

-Repeater

-Modem

11.Which of these abreviations represents a network type:

-HAN

**-PAN**

**-MAN**

-FAN

-DAN

**-WAN**

1. APIs are:

a. Primitives that allow communication between processes on different computers

**b. Set of functions called at the Operating System layer allowing us to create and use a socket**

c. Pseudo-files to read/write from/to

2. The bind() call sets up the connection between server and client.

a. True

**b. False**

3. The listen() call is used to wait for connection requests from clients.

**a. True**

b. False

4. Which call creates a new socket?

**a. Socket()**

b. Bind()

**c. Accept()**

5. Threads use less memory than processes.

**a. True**

b. False

6. Send() is not a blocking call by default.

a. True

**b. False**

7. What values can the send() call return?

**a. A number greater than 0, equal to the number of bytes sent**

**b. A number smaller than 0 if an error has occurred**

c. 0 if the operation was successful

8. What is the broadcast address of 30.94.37.0/24?

Answer: **30.94.37.255** (256 possible addresses with /24 mask)

9. An IPv6 address has:

a. 32 bits

**b. 128 bits**

c. 1024 bits

d. 64 bits

10. Which of the following layer of OSI model also called end-to-end layer?

a. Presentation layer

**b. Transport layer**

c. Network layer

d. Data Link layer

11. Each IP packet must contain both the source and destination addresses.

**a. True**

b. False

12. The layers of the TCP/IP Model are:

**a. Application Layer**

b. Network Layer

**c. Transport Layer**

**d. Internet Layer**

e. Physical layer

f. **Link Layer**

1. The order in which these actions happen in a TCP/IP app is:

a. Server sends answers, listens to the client’s requests and executes them

b. Server executes requests, it listens to client’s request and sends answers

**c. Server listens for client’s requests, executes them and answers**

2. Servers can handle:

a. Only one client at the same time

b. No clients

**c. Multiple clients at the same time**

3. UDP:

**a. No guarantee for datagram delivery**

b. Guaranteed data ordering delivery

**c. When creating a socket, the type is SOCK\_DGRAM**

d. Connection-oriented

4. TCP API has:

**a. Send**

b. Recvfrom

**c. Connect**

**d. Listen**

5. The Transport Layer:

a. Controls the operation of a subnet

**b. Accept data from upper layers**

c. Traffic regulation

**d. Ensure that packets arrive correctly to the other end**

6. To identify a process:

a. The IP address is enough

b. The port is enough

**c. We need both the IP address and the port**

d. None of the above answers

7. DHCP means:

a. Dynamic Home Configuration Protocol

b. Durable Host Configuration Protocol

**c. Dynamic Host Configuration Protocol**

d. None of the above answers

8. Having an IP and a netmask, how do you find the last IP of the class to which it belongs?

a. Logical ‘and’ between IP and netmask negated

**b. Logical ‘or’ between IP and netmask negated**

c. Logical ‘and’ between IP and netmask

d. Logical ‘or’ between IP and netmask

9. Which protocol is used to automatically assign IP addresses to hosts?

a. NAT

b. ARP

c. DNS

**d. DHCP**

10. What IP address does the localhost have?

a. 0.0.0.0

b. 255.255.255.252

c. 127.0.1

**d. None of the above answers**

11. How is a server on the Internet named?

a. HostName.TLD.Domain

**b. HostName.Domain.TLD**

c. TLD.Domain.HostName

d. Domain.HostName.TLD

12. FTP client contacts FTP server at port:

a. 19

b. 20

**c. 21**

d. 22

13. How many bytes does a MAC address have?

a. 12

**b. 6**

c. 4

d. 8

14. Principles of the OSI model:

**a. Each layer should perform a well-defined function**

b. The layer boundaries should be chosen to maximize the information across the  interfaces

**c. A layer should be created where a different abstraction is needed**

d. None of the above

15. The following are Transport protocols:

a. IP

**b. TCP**

**c. UDP**

d. DNS

16. In the Client-Server Paradigm, a host can be implemented both sides of a service, both as client  and as server:

**a. True**

b. False

c. Cannot be sure

17. Which application level protocol is used to transmit web pages?

a. SMTP

**b. HTTP**

c. TELNET

d. FTP

18. The following are Network Equipment:

**a. Network adapters**

**b. Hubs**

**c. Bridges**

**d. All of the above**

9. The maximum number of hosts for a class B network is:

a. 16,777,214

**b. 65,534**

c. 254

d. 0

20. The natural mask for a class C network is:

a. 0.0.0.0

b. 255.0.0.0

c. 255.255.0.0

**d. 255.255.255.0**

21. In a network:

**a. The first IP address is the Network Address**

b. The first IP address is the Broadcast Address

c. The last IP address is the Network Address

**d. The last IP address is the Broadcast Address**

1. Why isn't IPv4 flat addressing a good choice for routing nowadays?

a)It is too complex and difficult to grasp and implement.

**b)It requires a lot of resources in order to do extensive lookups.**

**c)CPUs nowadays aren't powerful enough.**

**d)we cannot have routers with 2^32 routing tables able to route all the traffic which goes through them**

2. What is the prefix for a class D address and what are class D addresses used for?

a)0,used for IP addressing

b)10, they are experimental addresses

**c)1110,used to difuse messages to a subset of machines,similar to distribution with subscription correct**

d)110,they are assigned to private networks

3. What was the universal broadcast address?

a)255.255.255.0

b)255.0.0.0

c)255.255.0.0

**d)255.255.255.255**

4. In the case of class full IP Addressing, what is the largest routing table we can have?

a)2^32

b)2^16

**c)2^7+2^14+2^21**

d)2^8+2^16

5. What is the disadvantage of class full IP Addressing?

**a)address space exhaustion**

b)Not enough addresses available in a class.

**c)inefficient use of address space**

d)too large routing tables

6. Broadcast can get through a router.

a)True

**b)False**

7. Why would an ISP aggregate smaller networks into a larger one?

a)It does not ever aggregate networks.

**b)In order to have one entry in the routing table of the router connecting the ISP to the Internet**

c)It can't store information about each network individually.

d)In order to group all networks for a specific client together.

8. Can there be multiple networks with 172.16.10.0/24?/Is the network 172.16.10.0/24 routed in Internet?

a)There can't, the network address has to be unique.

**b)There can, because it is a private network.**

**c)Yes, since the network address is not routed in Internet.**

d)Yes, only if the ISP is different.

9. What are the values of the network address and the netmask in the default route?

a)127.0.0.1 255.255.255.0

b)0.0.0.0 255.255.255.0

**c)0.0.0.0 0.0.0.0**

d)192.168.1.0 255.255.255.0

10. What is the more common name of the MAC Layer?

a)Internet layer

b)Session layer

c)physical layer

**d)data link layer**

11. What is TTL and on how many bytes is it represented?

a)a component of the application layer represented on 8 bytes

**b)it stands for time to live and it is represented on 1 byte**

**c)the number of routers allowed to pass until discarded, represented on 1 byte**

d)the transport time layer and it is represented on 8 bytes

12. Frames get reassembled before reaching their destination.

a)True

**b)False**

13. IP checksum is a type of error correction code.

a)True

**b)False**

e error detection nu correction

14. How does ARP find a destination MAC address?

a)using multicast

**b)through broadcast in the LAN**

c)it isn't used to find destination MAC addresses

d)using the default gateway in the LAN

15. What are exchange units called at the level of the Application layer?

a)frames

b)datagrams

c)packets

**d)data structure**

16. How many bytes does the header take in an IP datagram?

a)4 bytes

b)16 bytes

**c)20 bytes**

d)8 bytes

17. What happens to a packet if it has its DF flag set to 1?

a)It is fragmented when needed.

**b)It is not allowed to be fragmented and if there is a need to fragment it, the packet is dumped**.

**c)A message is sent to the source address if the packet doesn't fit the mtu of a passing data link layer.**

d)It is fragmented only when reaching the destination

1) What is the broadcast address of host 80.128.152.64/24’s network?

A: **80.128.152.255**

2) How many host addresses are in a /30 network?

A: **2**

3) The equivalent netmask for a class A network is:

a) 255.192.0.0

**b) 255.0.0.0**

c) 255.255.255.0

d) 255.255.255.128

4) Which is the lowest layer of the OSI stack?

**a) Physical**

b) Network

c) Application

d) Data link

5) Which of the following has the largest number of bits?

a) IPv4 address

**b) IPv6 address**

c) MAC address

6) Which is not a layer of the OSI stack?

a) Physical

b) Application

c) Network

**d) UDP**

7) Which of the following is a valid network IP?

a) 3.4.5.1/24

b) 3.4.5.128/20

**c) 3.4.5.192/26**

d) 3.5.1.0/16

8) What is the unit exchanged at network level in the OSI stack?

**a) Packet**

b) Bit

c) Frame

d) APDU

9) A router can be used as a DHCP server

**A: True**

10) A DHCP server can assign MAC addresses to computers in its network

**A: False**

11) TCP retransmits lost packages (True/False)

**A: True**

12) UDP data is:

a) reliable

b) ordered

**c) lightweight**

13) Which one of the following services is loss-tolerant?

a) e-mail

**b) real time video**

c) file transfer

d) instant messaging

14) Which of the following is a valid Classless InterDomain Routing address?

a) 3.4.5.1/24

b) FF.FF.FF.FF.FF.FF

c) 255.255.255

A: a) ... eu zic ca niciuna

15) Sliding window protocol is used by:

**TCP**

1. Choose the correct statement(s):

**a) A switch works in Data Link Layer.**

b) A router works in Transport Layer.

c) A switch works in Physical Layer.

**d) A router works in Network Layer.**

**2. Types of links in a computer network:**

**a)** coaxial cable

**b)** twisted pair

**c)** optical fiber

**d)** radio

**e) all of the above.**

3. A router:

**a) forwards data packets between computer networks;**

**b) builds the map of the network in the form of the routing table;**

**c) can be configured as a DHCP Server;**

d) can be configured as a DNS Server;

4. Choose the correct statement(s):

**a) Public IP comes with a cost.**

b) You can’t have the same 2 private IP’s in different local area networks.

c) Private IP’s can be used in WAN.

d) IPV6 has 64 bit addresseses.

5. DNS primarily uses:

a) TCP

**b) UDP**

6. An Access Point:

**a) It is wired connected to a router;**

**b) Is a wireless network device that allows devices to connect to the local area network via WIFI;**

c) It manages the local area network;

d) All of the above;

7. A DNS doesn’t:

a) provide host names to TCP/IP addresses;

**b) translate a TCP/IP address to another TCP/IP address;**

**c) provide an IP address to a device;**

d) use TCP at all;

8. This is true for packet switching:

**a) each data stream is divided into packets;**

b) has a fixed connection path between the source and the destination;

**c) packets move one hop at a time;**

d) uses bandwidth division into pieces;

9. Which of the following use TCP:

**a) HTTP**

**b) FTP**

c) ping command

d) all of the above

10. A Hub:

**a) operates on the physical layer;**

b) it is a smarter version of a switch;

**c) can’t store MAC addresses;**

d) has software for administration;

11. For socket programming with TCP:

a) client process must be running before the server

b) server can talk with a single client

**c) when contacted by client server creates a new socket**

d) the client needs to do bind operation

12. Which of the following is a public IP address:

a) 10.0.0.20

b) 150.0.0

c) 192.168.1.0

**d) 17.5.7.8**

1. What system call is used to create a new process in Linux?

* 1. wait
  2. **fork**
  3. kill
  4. open

2. Which is NOT a TCP characteristic?

a) reliable transport

b) connection-oriented

c) flow control

**d) datagram-based**

3. In which TCP/IP I/O model is the “select” system call used?

a) Blocking I/O model

b) Non-blocking I/O model

**c) Multiplexed I/O model**

d) Asynchronous I/O model

4. Which of the following sequences lead(s) to a deadlock?

|  |  |  |
| --- | --- | --- |
|  | Client | Server |
|  | write() | read() |
| write() | read() |
| read() | write() |
| b | write() | write() |
| write() | read() |
| read() | write() |
|  | **read()** | **read()** |
| **write()** | **read()** |
| **read()** | **write()** |

5. Which of the following affirmations is/are true?

a) A process is identified on the source and destination machines of TCP/IP communication solely by the IP address.

b) Different servers on the Internet can have the same name.

c) UDP provides reliable data transfer.

**d) UDP doesn’t require “listen” and “accept”.**

6. How is congestion manifested?

**a) lost packets**

b) packets arrive at the wrong destination

**c) long delays**

d) false error messages are sent

7. A class A network:

**a) Has the most significant bit 0.**

b) Has the most significant bits 10.

**c) Has the natural mask 255.0.0.0.**

d) Has the natural mask 255.255.255.0.

8. NAT:

a) Stands for Network Address Transmission.

b) Is an Internet Protocol.

**c) Makes it possible for all devices in a LAN to use the same IP address when communicating with the outside.**

**d) Makes devices not explicitly addressable by the outside world.**

9. In a network with mask 255.255.255.248:

a) Has 8 useable addresses.

**b) Has 6 useable addresses.**

**c) Has 3 bits for the host part.**

d) Has 3 bits for the network part.

10. Which of the following affirmations about routing algorithms is/are true?

**a) Dijkstra’s algorithm is used when all routers have complete topology.**

b) The distance vector routing algorithm outputs the routing table for a single node.

c) Dijkstra’s algorithm has linear time complexity.

**d) Both Dijkstra’s and the distance vector algorithm are iterative.**

11. Which protocol is used for delivery and storage of electronic mail to receiver’s server?

a) HTTP

**b) SMTP**

c) IMAP

d) POP

12. Which of the following affirmations about sockets is/are true?

**a) It is host-local.**

**b) It is OS-controlled.**

c) It is an interface into which the application process can only send messages to another application process.

**d) It can be used in client/server applications.**

13. Which of the following affirmations about Web caching is/are true?

**a) Web caching can satisfy the client request without involving the origin server.**

**b) Cache acts as both client and server.**

c) Web caching increases response time for client request.

d) Web caching increases traffic on an institution’s access link.

14. Which of the following affirmations about Cookies is/are true?

**a) Cookies can bring recommendations.**

**b) Advertising companies obtain info through cookies.**

c) Cookies do not allow sites to learn more about the user.

**d) The cookie file is kept on the user’s host.**

15. Which of the following affirmations about TCP retransmission is/are true?

a) TCP might drop packets that are not received.

**b) TCP retransmits a message that did not reach the destination.**

**c) TCP builds an average delay time for a packet to be sent and received.**

**d) TCP uses ACK for acknowledgement of received packets.**

16. The HTTP Protocol:

a) Is a mail exchange protocol.

**b) Allows exchange of HTML and Web data.**

c) Allows exchanging files between two machines.

d) Allows for offline message exchanging.

17. How many useable addresses does a network with mask /30 have?

a) 30

**b) 2**

c) 4

d) 0

18. The broadcast address of a network with IP address 195.67.89.1 and mask 255.255.255.0 is:

a) 195.67.89.1

b) 195.67.89.0

c) 195.0.0.0

**d) 195.67.89.255**

19. The network address of a network with IP address 195.67.89.1 and mask 255.255.255.0 is:

a) 195.67.89.1

**b) 195.67.89.0**

c) 195.0.0.0

d) 195.67.89.255

20. The possible number of hosts for a network with IP address 195.67.89.1 and mask 255.255.255.0 is:

**a) 254**

b) 256

c) 128

d) 1

1. Do routers need to recompute IP checksums at every hop?

**a) Yes**

b) No

2. When computing the checksum, the value of the checksum field is:

**a) 0**

b) 0xffff

c) 65535

d) 42

3. If a packet is larger than the MTU (Maximum Transmission Unit) it is fragmented in:

a) More TCP packets

b) More HTTP packets

**c) More IP packets**

d) More UDP packets

4. IP packets that have been segmented will be reassembled at:

**a) The destination**

b) The next hop with a large enough MTU

c) The default gateway

5. Which of the following is the TCP handshake:

a) SYN, ACK/FIN

b) SYN/ACK, SYN, FIN

**c) SYN, SYN/ACK, ACK**

d) SYN, SYN/ACK, FIN

6. The traceroute command works by:

a) Using RIPv2 queries

**b) Gradually increasing TTL**

c) Using ARP messages

**d) Receiving ICMP Time Exceeded**

7. TCP and UDP can use the same port at the same time:

**a) True**

b) False

8. When are we guaranteed to receive the data in a UDP packet in the same order it was

sent?

a) Never

**b) When the length of the packet is below the minimum MTU in the route**

c) Always

d) When the destination is on the same network as the source

9. DHCP is implemented over:

a) TCP

b) IP

c) ICMP

**d) UDP**

10. WHOIS is:

a) A system command that shows the username of the user that calls it

**b) A protocol used to query domain name information**

c) A system command and protocol that shows info about a local or remote user

Q1. How many bits of zero does the following netmask have? 255.255.255.248

Select one: DIN SESI

**a. 3 bits**

b. 4 bits

c. 8 bits

d. 2 bits

Q2. The ARP protocol helps with:

Select one or more:

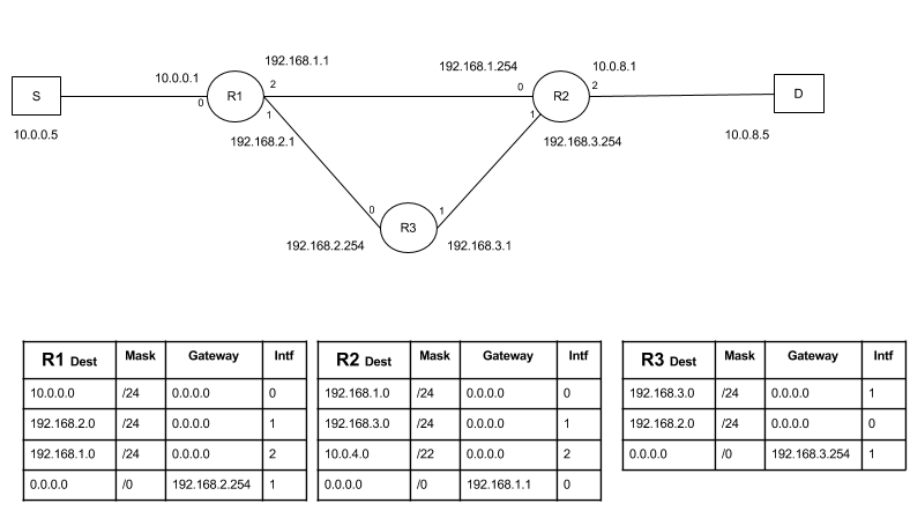
**a. Determining the MAC address when the IP address is known**

b. Determining the IP address when the MAC address is known

c. Determining the IP address when the DNS server is known

Q3. Given the network diagram bellow and the routing tables for routers R1, R2, R3 - provide the first 4 IP addresses displayed by executing on host S - traceroute 10.0.8.5 !

(addresses will be written separated only by comas with no spaces or other characters)



**The correct answer is: 10.0.0.1,192.168.3.1,192.168.1.254,10.0.0.1**

4. Which of the following is the correct host range for the subnet in which we can find the IP address 192.168.168.188/255.255.255.192 ?

Select one or more:

a. 192.168.168.128-192

b. 192.168.168.129-191

c. 192.168.168.128-190

**d. 192.168.168.129-190**

5. What is the broadcast address for subnet 200.35.1.192/27?

**200.35.1.223**

6. Consider the following netmask: 255.255.0.0, the network part(network length) is formed by a number of bits equal to

Select one or more:

a. 8

b. 24

**c. 16**

d. Impossible to determine

7. In TCP, bytes not read from the stream:

Select one or more:

a. A stream does not has bytes into his composition

b. are lost - but their count is reported as an error to the user

c. Are lost

**d. Stay available for next read**

8. What are the values of the network address and the netmask in the default route?

a. 0.0.0.0 255.255.255.0

b. 255.255.255.255 0.0.0.0

c. 127.0.0.1 255.255.255.0

**d. 0.0.0.0 0.0.0.0**

9. Which of the following address can be a valid host IP that can be allocated to a host:

Select one or more:

**a. 193.231.21.0**

**b. 18.19.20.255**

c. 223.245.256.17

10. Not all IP addressses from the class 192.168.0.0/8 are private

Select one:

**a) True**

b) False

11. A TCP header is larger than a UDP header by how many bytes? **Answer: 12**

12. The cheksum in the IP header is computed:

a. when passing through each switch and hub in order to ensure consistency

**b. on each router**

**c. on the source and destionation hosts**

d. everytime a router believes the packet has been altered

13. Which of the following is a valid IP/Netmask combination? Select one or more:

**a. 209.220.186.8/255.255.255.248**

b. None of the combinations are correct

c. 209.220.186.8/255.255.255.240

**d. 209.220.186.8/255.255.255.252**

e. 209.220.186.8/255.255.255.240

14. Which of the following IP addresses cannot be broadcast addresses ?

a) 192.168.0.255

**b) 200.0.0.33**

**c) 10.0.1.254**

d) 25.0.2.31

aduni cu un +1 ca sa iesi din intervalul [NA, BA] si sa obtii urmatoarea adresa candidat network. Si pentru acea noua adresa verifici CIDR. 255 + 1 = 256 % 4 ==0 (sau 256 devine 0 tot aia)...33 + 1 = 34 % 4 != 0 etc

15. Which of the following addresses can be valid network addresses provided appropriate network masks ?

Select one or more:

a. 193.231.20.2

**b. 193.231.20.4**

c. 193.231.20.1

**d. 193.231.20.0**

e. 193.231.20.3

18. What is the broadcast address of the network 190.60.16.0/28?

a. 190.60.16.31

b. 190.60.16.255

**c. 190.60.16.15**

d. 190.60.16.7

19. What is the last valid host on the network that 10.215.81.114 / 255.240.0.0 is a part of?

Answer: **10.223.255.254**

22. accept() is required in any UDP server

Select one:

True

**False**

23. Consider one SWITCH and 10 PC's connected to it. Which of the following is false?

Select one or more:

a. when PC1 sends a message to PC5, the message will be received and processed just by PC5 and the answer of PC5 will be received and processed just by PC1 "

**b. when PC1 sends a message to PC5, the message will be received by all the PC's, but only PC5 process it; the answer is sent back and received only by PC1**

**c. when PC1 sends a message to PC5, the message will be received by all the PC's, each of them sending back an answer**

**d. when PC1 sends a message to PC5, the message will be received by all the PC's but only PC5 process it; the answer will be also received by all the PC's but only PC1 will process it**

24. What is the netmask of the minimum sized network that has as broadcast 70.71.79.255 and also contains the host IP address 70.71.79.240 ?

Stim marginea de final, adica .255, deci ultimul host e .254. Stim un host ip, .240, ceea ce inseamna ca trebuie sa avem minim 254-240+1=15hosts. Pe langa asta, avem NA si BA, deci minim 17ips. 17<32. 256-32=224. deci **255.255.255.224**.

27. How many bits of 0 are in the following netmask? 255.255.255.254 ?

Answer: **1**

28. What is the netmask of the largest network with the address 84.176.0.0 ? (as x.y.z.t)

**255.240.0.0**

176 in binar = 1011 0000

deci avem 4 de zero + 8 + 8 = 20...avem 20 de 0 deci inseamna ca o sa fie 32-20=12 de 1. => masca e /12. Masca /12 se scrie ca 255.240.0.0

30. Given the address 137.25.28.0/255.255.254.0 provide the maximum number of valid subnets that can be obtained from splitting this network

**128**

/255.255.254.0 = /23 = 2 \* /24 = 4 \* / 25 = 8 \* /26 = 16 \* /27 = 32 \* /28 = 64 \* /29 = 128 \* /30

31. Which of the following can be a mask, such that 62.244.89.16 is a valid network address?

**a. 255.255.255.252**

**b. /29**

**c. 255.255.255.248**

d. /27

e. 255.255.255.128

33. What netmask is needed to split a network with address 133.25.0.0/16 in 1000 subnets of 14 hosts each?

a. /21

**b. /28**

c. /19

d. /15

14hosts => 16size of block => 2^4 => 32-4=/28

34. Which of the following is a private IP address ?

Select one or more:

**a. 192.168.24.43**

b. 172.15.14.36

c. 168.172.19.40

d. 12.0.0.2

35. Which of the following are valid subnetwork addresses ?

Select one or more:

**a. 177.91.107.0/30**

b. 177.91.154.2/30

**c. 177.91.107.144/29**

d. 177.91.107.1/25

38. What happends if the Gateway in a Routing table entry is 0.0.0.0?

a. The router drops the packet as there is no such gateway ip address

b. This is not possible

c. All packets will be directed to 0.0.0.0

**d. The router puts the packet on the associated network interface with this route**

41. A TCP connection is terminated through:

**a. a 4-way handshake**

**b. a 3-way handshake**

c. a 2-way handshake

d. none of the answers are correct

42. 254.255.0.0 is a valid netmask

Select one:

True

**False**

43. Which of the following is not a characteristic of the IP protocol?

Select one or more:

a. Is considered an unreliable protocol

b. It affects packet routing

**c. Is a connection-oriented protocol**

d. It defines the Internet addressing system

44. Write as [network address]/[xx] - in the most compact and ordered way - the addressing space 62.255.254.224...63.64.0.31. (if multiple combinations are needed write them separated by comas without spaces or other characters)

The correct answer is: **62.255.254.224/27,62.255.255.0/24,63.0.0.0/10,63.64.0.0/27**

Impartim in mai multe network-uri. Ca sa fie compact, ne trebuie range-urile:

62.255.254.224-62.255.254.255 = size de 32 <= 32=2^5 => /27

62.255.255.0 - 62.255.255.255 = size de 256 <= 256=2^8 => /24

63.0.0.0 - 63.64.0.0 = size de 2^(8+8+6) = 2^22 => /10

63.64.0.0 - 63.64.0.31 = size de 32 => /27

64 = 1000000 (6bits de 0)

45. The broadcast for 192.120.0.1/16 is 192.120.255.255

Select one:

**True**

False

46. What is the range of all IPs in which the following given IP resides :194.168.19.69/28 ?

Select one or more:

a. 194.167.19.68 – 194 .167.19.83

b. 194.168.19.64 – 194.168.19.87

c. 194.168.19.0 - 194.168.19.15

**d. 194.168.19.64 – 194.168.19.79**

47. The network address canot be calculated using the netmask and an IP address

Select one:

True

**False**

48. The following code is a:

listen(s, 5);

while (1) {

memset(&client, 0, sizeof(client));

l = sizeof(client);

c = accept(s, (struct sockaddr \*) &client, &l);

if (fork() == 0) {

worker();

}

wait(0);

}

**a. iterative server**

b. concurrent server

c. peer to peer server

d. concurrent multiplexed server

49. Which of the following IP sets belong to 209.220.186.12/255.255.255.252 ip class?

Select one:

a. 209.220.186.10, 209.220.186.11, 209.220.186.12, 209.220.186.13, 209.220.186.14, 209.220.186.15, 209.220.186.16, 209.220.186.17

b. 209.220.186.12, 209.220.186.13, 209.220.186.14, 209.220.186.15, 209.220.186.16, 209.220.186.17, 209.220.186.14, 209.220.186.18

**c. 209.220.186.12, 209.220.186.13, 209.220.186.14, 209.220.186.15**

d. 209.220.186.13, 209.220.186.14, 209.220.186.15, 209.220.186.16

Which one of the following addresses is a public IP address assignable to a computer ?

Select one or more:

a. 172.16.23.201

**b. 1.0.0.1**

c. 10.5.125.4

d. 225.46.130.1

52. How many /27 networks are needed such that they can be supernetted to a /24 network?

**Answer: 8**

53. 193.231.20.0/24 can be divided in exactly X subnets of equal sizes. X=?

a. 7 subnets

b. 14 subnets

c. 5 subnets

**d. 8 subnets**

**e. 4 subnets**

54. In which host range is the IP address 175.156.68.80 255.255.255.192?

a. 175.156.68.64-128

b. 175.156.68.64-126

**c. 175.156.68.65-126**

d. 175.156.68.65-128

55. ARP can be used for...

Select one or more:

a. Mapping public virtual addresses to private ip addresses

b. Publishing websites to the internet

c. Sending emails very fast

**d. Mapping network addresses to physical (MAC) addresses**

57. Broadcasting is

Select one or more:

**a. When a transmitted packet is received and processed by every machine on the network**

b. When a transmitted packet is received by every machine on the network but processed by only one of them

c. When a transmitted packet is received by every machine on the network but processed by none of them

d. A mechanism which is used when the transmission of a packet fails

58. 255.192.0.0 is a valid netmask for the network

Select one or more:

**a. 132.128.0.0**

**b. 192.128.0.0**

c. None of the choices

d. 192.193.1.0

59. The time-to-live for a packet(TTL) is expressed in:

Select one or more:

a. seconds

b. the number of routers the packet has already passed through( incremented by 1)

c. routers/ second

**d. the number of routers the packet is allowed to pass**

e. milliseconds

60. Which is the correct expression for the length of UDP datagram payload ?

a. UDP length = UDP length + UDP header’s length

b. UDP length = UDP length – UDP header’s length

c. UDP length = IP length + IP header’s length

**d. UDP length = IP length – IP header’s length -UDP header length**

61. What will you get if you 'or' together the netmask of a network and one IP in that network?

Select one or more:

**a. Nothing significant**

b. The first IP address in the class of the given IP

c. The last IP in the class of the given IP

d. The class of the ip.

62. Write the network mask (only as /x.y.z.t) of the minimum sized network that contain both 80.81.82.83 and 80.83.84.85

The correct answer is: **255.252.0.0**

the range is 80.81.82.83 – 80.83.84.85

- Luam byte cu byte: 80 este egal cu 80, deci primul byte e la fel (adunam 8bits.)

- 81 si 83 difera:

81: 0101 0001

83: 0101 0011

- Primii 6 bitsi sunt la fel, dupa toti difera.

- Deci stim ca primii 8+6=14bits sunt la fel => /14 care e 255.252.0.0

63. What is true about ICMP packets ?

Select one or more:

a. They do not provide hosts with information about network problems.

b. They guarantee datagram delivery.

**c. They are encapsulated within IP datagrams.**

d. ICMP is encapsulated within UDP datagrams.

64. Which of the following cannot be a broadcast address ?

Select one or more:

a. 192.168.1.255

b. 22.21.20.19

c. 10.20.30.255

**d. 20.19.18.17**

**e. 21.20.19.18**

65. All IP addresses from the class 10.0.0.0/16 are private

Select one:

**True**

False

66. Which of the following is true about the IP address 10.16.3.65/23?

Select one or more:

a. The broadcast address of the subnet is 10.16.3.254

b. The subnet address is 10.16.3.0/255.255.254.0

**c. The lowest host address in the subnet is 10.16.2.1**

d. The last valid host address in the subnet is 10.16.2.254

67. You have an interface on a router with the IP address of 192.168.192.10/29. Including the router interface, how many hosts can have IP addresses on the LAN attached to the router interface?

Select one or more:

a. 5

**b. 6**

c. 8

d. 7

68. What is the broadcast address for IP combination 132.45.99.0/19?

Answer: **132.45.127.255**

69. What is the network address and mask of the smallest subnet that fits these two IP addresses: 180.181.182.183 and 180.186.12.180? (addr/x.y.z.t format)

The correct answer is: **180.176.0.0/255.240.0.0**

Primii 8 bits sunt la fel.

181 = 1011 0101

186 = 1011 1010

Primii 4 sunt la fel

Deci 8+4 = /12 = 255.240.0.0

Ca sa aflam NA, faci 180.181.182.183 AND 255.240.0.0 = 180.176.0.0

1. MAC means Media Access Control

**A. True**

B. False

2. The MAC address has 6 groups of 2 hexadecimal numbers

**A. True**

B. False

3. The connect system call is normally called by the client process in order to connect to a server process.

**A. True**

B. False

4. The listen system call indicates to the protocol that the client process is ready to accept new incoming connections on the socket.

A. True

**B. False**

5. All the hosts from the same network can physically reach each other without an intervening router

**A. True**

B. False

6. A network address can be determined based on a IP Address from the network and the netmask.

**A. True**

B. False

7. For connecting a host with a private address to the Internet, it has to be translated to a public address, process named ARP.

A. True

**B. False**

8. The network address can be obtained from an IP address and the netmask using the logical operation “OR”

A. True

**B. False**

9. When NAT is involved, the local network uses just one IP address as far as outside world is concerned

**A. True**

B. False

10. The number of IP addreses allocated for each subnet block has to be a power of 4.

A. True

**B. False**

11. The default gateway serves as an access point or IP router that a networked computer uses to send information to a computer in the same network or the Internet.

A. True

**B. False**

12. A proxy server acts as an intermediary for requests from clients seeking resources from other servers.

**A. True**

B. False

13. A collection of computers (PCs, Workstations) and other devices interconnected represent a computer network.

**A. True**

B. False

14. Hosts (computers), links (coaxial cable, twisted pair, optical fiber, radio, satellite), switches/routers (intermediate systems) are all components of a computer system.

A. True

**B. False**

15. Which IP address is reserved for software loop-back?

A. 224.x.y.z

B. 255.255.255.255

C. 0.0.0.0

**D. 127.x.y.z**

16. How many hosts can be addressed on 10.0.0.0/16?

**65534**

17. 43.29.45.132/27 can be a network address

A. True

**B. False**

18. What is the range of network IPs in which the following given IP resides: 194.168.19.69/28?

**A. 194.168.19.64 - 194.168.19.79**

B. 194.168.19.0 - 194.168.19.15

C. 194.167.19.68 - 194.167.19.83

D. 194.168.19.64 - 194.168.19.87

19. The listen() call is not mandatory in any TCP client

**A. True**

B. False

20. The listen() call is mandatory in any TCP client

A. True

**B. False**

21. The default gateway of a computer is the IP of the router from that network

**A. True**

B. False

22. A computer cannot have 2 gateways

A. True

**B. False**

23. A computer can have 2 gateways

**A. True**

B. False

24. The netmask /10 corresponds to ..........(x.y.z.t)

**255.192.0.0**

25. What is the 4 byte netmask for the following IP network? 10.10.0.0/17

A. 255.255.0.0

B. None of the network masks are correct

C. 255.255.255.128

**D. 255.255.128.0**

E. 255.255.255.0

26. What is the broadcast address for subnet 132.45.99.0/19?

132.45.127.255

27. 1.1.1.1 is not a private IP address

**A. True**

B. False

28. 1.1.1.1 is a private IP address

A. True

**B. False**

29. A network with the netmask 255.255.255.0 can have a maximum of 2^8-2=126 hosts

A. True

**B. False**

30. A network with the netmask 255.255.255.0 can have a maximum of 2^8-2=254 hosts

**A. True**

B. False

31. All IP addresses form the class 172.16.0.0/12 are private

**A. True**

B. False

32. HTTP stands for Hyperspeed Transfer Protocol

A. True

**B. False**

33. HTTP stands for Hypertext Transfer Protocol

**A. True**

B. False

34. The maximum number of actual hosts from a class C network is

**254**

35. 193.255.20.0 can be a network address

**A. True**

B. False

36. How many pairs of address/mask are needed to write the range 193.226.17.224 ... 193.226.23.23 as network/mask in the most compact way?

**6**

.17.224-.17.255 (193.226.17.224/27)

.18.0-.19.255 (193.226.18.0/23)

.20.0-.21.255 (193.226.20.0/23)

.22.0-.22.255 (193.226.22.0/24)

.23.0-.23.15 (193.226.23.0/28)

.23.16-.23.23 (193.226.23.16/28)

37. A hub understands a MAC address

A. True

**B. False**

38. A hub does not understands a MAC address

**A. True**

B. False

39. accept() is not required in any TCP client

**A. True**

B. False

40. accept() is required in any TCP client

A. True

**B. False**

41. The netmask /30 corresponds to ....(x.y.z.t)

**255.255.255.252**

42. An IP address is a unique identifier for each computer in a IP network

**A. True**

B. False

43. 172.15.0.1 is not a private IP address

**A. True**

B. False

44. 172.15.0.1 is a private IP address

A. True

**B. False**

45. Broadcasting is:

A. When a transmitted packet is receive by every machine on the network but processed by none of them

B. A mechanism which is used when transmission of a packet fails

C. When a transmitted packet is received by every machine on the network but processed by only one of them

**D. When a transmitted packet is received and processed by every machine on the network**

46. 00:00:00:00:00:00 is not a MAC broadcast address

**A. True**

B. False

47. A computer can have multiple IP addresses

**A. True**

B. False

48. A computer cannot have multiple IP addresses

A. True

**B. False**

49. SSH is not located at the Application layer

A. True

**B. False**

50. SSH is located at the Application layer

**A. True**

B. False

51. The netmask of a network with 1024 IP addresses is /22

**A. True**

B. False

52. 127.0.0.1 it can not be set on a system as default gateway

**A. True**

B. False

53. Localhost is 127.0.0.1

**A. True**

B. False

54. Localhost is not 127.0.0.1

A. True

**B. False**

55. Localhost is 172.0.0.1

A. True

**B. False**

56. Localhost is not 172.0.0.1

**A. True**

B. False

57. Which protocol(s) are used in the transport of Ping packets?

A. TCP

**B. IP**

C. ARP

D. UDP

**E. ICMP**

58. The recvfrom() call reads data from a TCP client

A. True

**B. False**

59. The recvfrom() call reads data from a UDP client

**A. True**

B. False

60. Which of the following involve NAT?

**A. Port forwarding.**

**B. Accessing the web from an internal network. Your PC's network will be translated to your public IP (i. e. home network)**

**C. Address Translation.**

61. A switch can transport

**A. UDP packets**

**B. IP packets**

**C. TCP packets**

62. 192.168.1.155 belongs to the class 192.168.1.0/24

**A. True**

B. False

63. 192.168.1.155 belongs to the class 192.168.0.0/24

A. True

**B. False**

64. Star is a network topology

**A. True**

B. False

65. Star is not a network topology

A. True

**B. False**

66. TCP is not located at the Network layer

**A. True**

B. False

67. Ring is not a network topology

A. True

**B. False**

68. Ring is a network topology

**A. True**

B. False

69. Two computers from the internet can have the same IP address if they use private IP addresses

**A. True**

B. False

70. A switch can transport IP packets

**A. True**

B. False

71. The maximum number of valid networks (that can be allocated) in a class A network is

**127**

72. Which of the following are valid subnetwork addresses?

**A. 177.91.107.0/30**

B. 177.91.107.1/25

C. 177.91.154.2/30

**D. 177.91.107.144/29**

73. The netmask cannot contain 1 bits intercalated with 0 bits

**A. True**

B. False

74. Choose the true statement(s)

**A. Using UDP protocols packets can be lost**

**B. UDP reads bytes from a packet**

**C. TCP writes stream of bytes**

D. TCP reads bytes from a packet

75. Represent /26 in doted

**255.255.255.192**

76. The netmask can't be determined using an IP address and the broadcast address

**A. True**

B. False

77. A web server can run on ports different than 80

**A. True**

B. False

78. A web server cannot run on ports different than 80

A. True

**B. False**

79. The broadcast address cannot be calculated using the IP address and the netmask

A. True

**B. False**

80. Given the ip address 172.16.1.1 with a mask of 255.255.255.0. How many total subnets could be created? Use the same subnet mask

**64** (de cate 4 fiecare)

81. A UDP socket is created using the parameters AF\_INET and SOCK\_STREAM

A. True

**B. False**

82. The network address cannot be calculated using the broadcast address and the netmask

A. True

**B. False**

83. bind() cannot be used in UDP clients

A. True

**B. False**

84. bind() can be used in UDP clients

**A. True**

B. False

85. LAN is a global network

A. True

**B. False**

86. bind() is required in any UDP client

A. True

**B. False**

87. A switch cannot transport TCP packets

A. True

**B. False**

88. HTTP is located at the Transport Layer

A. True

**B. False**

89. 127.0.01 can not be a broadcast address

**A. True**

B. False

90. The sendto() call sends data to the TCP client

A. True

**B. False**

91. 192.168.2.32/27 can be a network address

**A. True**

B. False

92. The recvfrom() call sends data to the UDP client

A. True

**B. False**

93. UDP waits for a confirmation of the received packets

A. True

**B. False**

94. The MAC address has 48 bits

**A. True**

B. False

95. accept() is required in any UDP client

A. True

**B. False**

96. 192.168.0.2/23 and 192.168.1.6/23 belong to the same network

**A. True**

B. False