

Computer Networks Questions

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**

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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**

19. 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**

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. correct
- c)CPUs nowadays aren't powerful enough. correct
- d)we cannot have routers with 2^{32} routing tables able to route all the traffic which goes through them correct

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 diffuse messages to a subset of machines,similar to distribution with subscription correct
- d)110,they are assigned to private networks

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 correct

In the case of class full IP Addressing, what is the largest routing table we can have?

- a) 2^{32}
- b) 2^{16}
- c) $2^7 + 2^{14} + 2^{21}$ correct
- d) $2^8 + 2^{16}$

What is the disadvantage of class full IP Addressing?

- a)address space exhaustion correct
- b)Not enough addresses available in a class.
- c)inefficient use of address space correct
- d)too large routing tables

Broadcast can get through a router.

- a)True
- b)False correct

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 correct
- c)It can't store information about each network individually.

d)In order to group all networks for a specific client together.

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. correct
- c)Yes, since the network address is not routed in Internet. correct
- d)Yes, only if the ISP is different.

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 correct
- d)192.168.1.0 255.255.255.0

What is the more common name of the MAC Layer?

- a)Internet layer
- b)Session layer
- c)physical layer
- d)data link layer correct

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 correct
- c)the number of routers allowed to pass until discarded, represented on 1 byte correct
- d)the transport time layer and it is represented on 8 bytes

Frames get reassembled before reaching their destination.

- a)True
- b)False correct

IP checksum is a type of error correction code.

- a)True
- b)False correct

How does ARP find a destination MAC address?

- a)using multicast

- b)through broadcast in the LAN correct
- c)it isn't used to find destination MAC addresses
- d)using the default gateway in the LAN

What are exchange units called at the level of the Application layer?

- a)frames
- b)datagrams
- c)packets
- d)data structure correct

How many bytes does the header take in an IP datagram?

- a)4 bytes
- b)16 bytes
- c)20 bytes correct
- d)8 bytes

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. correct

c)A message is sent to the source address if the packet doesn't fit the mtu of a passing data link layer.
correct

d)It is fragmented only when reaching the destination

1)

Q: What is the broadcast address of host 80.128.152.64/24's network?

A: 80.28.152.255

2)

Q: How many host addresses are in a /30 network?

A: 2

3)

Q: 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

A: b)

4)

Q: Which is the lowest layer of the OSI stack?

- a) Physical
- b) Network
- c) Application
- d) Data link

A: a)

5)

Q: Which of the following has the largest number of bits?

- a) IPv4 address
- b) IPv6 address
- c) MAC address

A: b)

6)

Q: Which is not a layer of the OSI stack?

- a) Physical
- b) Application
- c) Network
- d) UDP

A: d)

7)

Q: 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

A: c)

8)

Q: What is the unit exchanged at network level in the OSI stack?

- a) Packet
- b) Bit
- c) Frame
- d) APDU

A: a)

9)

Q: A router can be used as a DHCP server (True/False)

A: True

10)

Q: A DHCP server can assign MAC addresses to computers in its network (True/False)

A: False

11)

Q: TCP retransmits lost packages (True/False)

A: True

12)

Q: UDP data is:

- a) reliable
- b) ordered
- c) lightweight

A: c)

13)

Q: Which one of the following services is loss-tolerant?

- a) e-mail
- b) real time video
- c) file transfer
- d) instant messaging

A: b)

14)

Q: 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)

15)

Q: Sliding window protocol is used by:

- a) TCP
- b) UDP

A: a)

Computer Networks Exam Questions

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 is the most usual type of wire which connects stations. What about switches?
- 2)Describe a bus type link
- 3)When should you use statistical multiplexing? Why?
- 4)What delay would you expect if you want to send a packet of 7.5Mbits from point A to point B passing through 2 routers with links of 1.5Mbps(trace: A->router->router->B).Explain the answer
- 5)Name 2 things which the app-layer protocol defines.
- 6)Describe the client-server paradigm
- 7)How do processes communicate to each other?
- 8)What is a socket ?
- 9)Describe how would a "client" would communicate with a "server" using TCP.
- 10)What conditions must a socket satisfy in order to be able to read from it ?

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

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 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
- (correct = A)

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 transmitted via ICMP ?

- a) no memory left; b) destination host undefined; c) destination host unreachable; d) bad IP header
- (correct = C and D)

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
- (correct = C)

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
- (correct = A, C)

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
- (correct = B)

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)

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
- (correct = B)

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

6) Some protocols of the Application Layer are:

- a) HTTP**
- b) TCP
- c) ARP
- d) Bitcoin**

7) A DNS Server translates IP addresses to domain names:

- a) True
- b) False**

8) For RIPv2:

- a) it supports only class full networks
- b) does not provide trigger updates
- c) its hop count limit is 15**
- d) it is configured on the router

9) The ARP Protocol 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

11) The Traceroute tool uses IP TTL to trace packet paths:

- a) True**
- b) False

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;

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;

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; *

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;

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

1. In which application(s) is data loss tolerated? (b, d)
 - 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)
 - a. TCP server
 - b. UDP server
 - c. TCP client
 - d. UDP client

4. How many layers does the OSI Reference Model have? (c)
 - a. 5
 - b. 6
 - c. 7
 - d. 4

5. TCP, UDP are in the: (b)
 - 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)
 - a. 1 bit
 - b. 7 bits
 - c. 4 bits

d. 2 bits

7. Which of the following is a Natural Mask? (b)

- 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? (b)

- 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)

- 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)

- 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
- a,b,d correct answers

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

d correct answer

3) Which layer from the OSI Reference Model handles flow control

a) Application

b) Session

c) Presentation

d) Data Link

d correct answer

4) Which address 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

b correct answer

5) When is the TCP syn flag set to 1:

a) at connection request

b) at connection close

a is the correct answer

6) Which of the following are advanced TCP I/O Models

a) blocking I/O

b) nonblocking I/O

c) signal driven I/O

d)Asynchronous I/O

a b c d are the correct answers

7)Which protocols from the following are not application level protocols

a)HTTP

b)SMTP

c)DNS

d)RIP

d is the correct one

8)Which port is used for the SMTP Protocol

a)20

b)21

c)25

d)26

c is the correct answer

9)ICMP type for ping

a)0

b)4

c)8

d)12

a and c are the corect answers

10)What is Adress Resolution Protocol used for

a)finding the network adress

b)finding the MAC adres

c)findig subnet adresses

d)finding resolution

e)finding Nemo

b is the correct answer

11)A mobile user, passing through multiple access points has

a)high mobility

b)low mobility

a is correct answer

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

a,b,c,d are correct answers

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

Correct answer: C. Trunk 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

Correct answer: B and D

3. When do we use recv ?

A. when we use TCP

B. when we use UDP

Correct answer: A. when we use TCP

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

Correct answer: D and C

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.

Correct answer: A, B, C and D

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

Correct answer: 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

Correct answer: B. HostName.Domain.TLD

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. $2^{32} - 2$

Correct answer: B and C

1. Which of the following statements are not true about the UDP API?

- It read bytes from one packet
- Listen and accept are required ✓
- Doesn't guarantee for datagram delivery or ordering
- Bytes not read from the packet stay available for the next read ✓

2. Which of the following statements about DNS are true?

- The correct naming configuration is: Domain.HostName.TLD
- DNS is an application layer protocol ✓
- DNS stands for Dynamic Naming System
- A DNS server can be a default gateway ✓

3. What is the maximum data rate for a 2 kHz channel with binary signals?

R: 4000

4. Which of the following are part of the TCP/IP Model?
- Application ✓
 - Presentation
 - Data Link
 - Physical
5. The natural mask for a class B address is:
- 255.255.0
 - 255.0.0.0
 - 255.255.0.0 ✓
 - 255.255.255.0
6. How many bits does the source IP address occupy in the IP Datagram?
- 64 bits
 - As many as the destination IP address does ✓
 - As many as the Header Internet Checksum does
 - 32 bits ✓
7. Which statements are true about the SMTP?
- It allows for online message exchanging
 - It stands for Simple Mail Transfer Protocol ✓
 - Its server port is 25 ✓
8. Which of the following statements are false about NAT?
- It stands for Network Address Transcription ✓
 - Just one IP address is used for all devices in the local network as seen from the outside world
 - You need to notify the outside world for any change of address in the local network ✓
 - Does not bring any security benefit ✓
9. ICMP Echo and Reply are used by Ping in order to determine if a host is up
- True ✓
 - False
10. What happens after receiving one duplicate Acknowledgment?
- Congestion Window is cut in half
 - Congestion Window is set to 1 MSS
 - Congestion Window is doubled

R: none of the answers are correct

11. When the Congestion Window is below the Threshold:

- The window grows linearly
- The window is set to 1 MSS
- The window grows exponentially ✓

12. What is the port on which the HTTP works?

R: 80

13. Which of the following statements about FTP are true?

- It uses 4 channels: control, data, active, passive
- It uses 2 channels: control, data ✓
- It uses 2 channels: active, passive
- It uses 3 channels: control, active, passive

14. Which port(s) are used in the FTP?

- Port 20 ✓
- Port 25
- Port 30
- Port 21 ✓
- Port 31

15. 127.0.0.1 can be:

- A network address
- A broadcast address
- Set as default gateway ✓
- 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 T

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. T
- 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. T

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) $\sim 2^8 + 2^{16} + 2^{24}$ T
- b) $\sim 2^{32}$
- c) $\sim \text{factorial}(2^{32})$
- d) $\sim \text{combinations of } 2^{32} \text{ taken 2}$

6) What happens 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 T

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 T

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 T

10) What are the 3 levels of hierarchy of IP Subnet

- a) network, subnet, host portions T
- b) network, masks, host portions
- c) host, subnet, network portions T
- d) host, masks, network portions

Computer Networks Questions (**correct answers in bold**):

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.**
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.**
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 abbreviations represents a network type:

- HAN
- PAN
- MAN
- FAN
- DAN
- WAN

Questions for the Computer Networks Written Exam

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**
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
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
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**
14. Data communication system within a building or campus is ____:
- A) LAN**
 - B) WAN
 - C) MAN
 - D) PAN

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

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) locator
24. Which field helps to check rearrangement of the fragments?
- A) **offset**
 - B) flag
 - C) TTL
 - D) identifier
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) 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

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

1. With TCP, one party can overflow the other

a) True

b) False -C

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 -C

3. The recvfrom system call returns the source socket

a) True -C

b) False

4. Find the maximum number of subnets in which we can split the network 3.4.5.0/24 such that addresses 3.4.5.192 and 3.4.6.248 would be in the same subnet.

- a) 4
- b) 2
- c) 49 - C (16 +1 +16 +16)
- d) 50

5. What layer from the OSI model has frames as data units?

- a) Transport layer
- b) Network layer
- c) Datalink layer - C
- 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 - C

7. How long is an IPv6 address?

- a) 4 bytes
- b) 32 bytes
- c) 16 bytes - C
- d) 8 bytes

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

- a) arp /a -C
- 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 -C
- b) 209.220.186.9/255.255.255.0
- c) 209.220.186.8/255.255.255.248 -C
- 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 -C
- b) data loss needs to be avoided
- c) bandwidth-intensive transport -C
- d) none of the above

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 language that is used to describe web pages. -C
- 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 -C
- d) 012FE4

13. For error detection in TCP/IP we use?

- a) Bit sum
- b) Check sum -c
- 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
- c) 16
- d) 8

16. ARP can be used for :

- a) Mapping network addresses to physical addresses -C
- 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 -C

d) letter

18.Which of the following is not done by TCP?

a) delivery confirmation

b) flux control

c) broadcasting -C

d) keeping the order of the bytes sent

Seminar 4 p. 2

[Gegenwart 9.2.02.2021]

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

Correct → d) Application, presentation and session layers

2. Which is a true end-to-end layer in the OSI Ref Model

- a) Data link layer
- b) Transport layer ← Correct
- c) Network layer
- d) Physical layer

3. Which OSI Reference Model can be thought of as the one that maps bits to some a certain signal:

- a) Data link layer
- b) Physical layer ← Correct
- c) Transport layer
- d) session layer

4. The 802.11 IEEE standard is used for:

- a) Ethernet
- b) Wireless LANs
- c) Bluetooth
- d) it is unused ← Correct

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 ~~is~~ - correct
- d) asynchronous i/o

6. What protocol handles moving a datagram from source to destination? (multiple answers)

- a) RIP
- b) IPv4/IPv6 > correct
- c) internet protocol
- d) PIM

7. What is the minimum number of addresses from a B class of the class full addressing?

- a) 255
- b) 256 - correct
- c) 2000
- d) 128

greater limit

924

02.02.2021

8. The following is true about NAT:

- a) ISP is not affected by changes in local network (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 - correct

9. An ISP has 4 organizations with networks:

$O_0 : 200.23.16.0/24$

$O_1 : 200.23.17.0/24$

$O_2 : 200.23.18.0/24$

$O_3 : 200.23.19.0/24$

If we supernet the organizations we will get:

a) $200.23.19.0/25$

b) $200.23.16.0/20$

c) $200.23.16.0/22$ - correct

d) $200.23.20.0/24$

10. TTL defines:

- a) the type of service an IP datagram is carrying
Correct - b) the number of routers the packet can pass
- c) the actual data inside the datagram
- d) none of the above

Groger Yenut

gby

02.02.2021

Proposed Questions

Lucaciu Catalin 924

1 Q: Which is the Port number used by Network Time Protocol (NTP) with UDP?
A: 123

2 Q: Considering the OSI Ref. Model, what's the first layer where we can talk about IP protocol?
A: The Network Layer

3 Q: What's the minimum number of interfaces a router should have?
A: It should have a minimum of 2 interfaces.

4 Q: What is a solution for "Flat Addressing"?
A: Classfull IP Addressing and CIDR

5 Q: How many networks can we have in the Class A of ip addressing?
A: $2^8 = 256$ networks

6 Q: Consider a block with 32 addresses. Can it begin with 193.226.40.96?
A: Yes, $96\%32 == 0$

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)

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)

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, and we need 256 only for computers, each network should have at least 2 reserved IP addresses. The answer is no.

Computer Networks Proposed Questions

1. In TCP paradigm, which of the following system calls are blocking calls?
 - a. accept()
 - b. bind()
 - c. connect()
 - d. all of the above
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?
 - a. bind()
 - b. socket()
 - c. listen()
 - d. close()
5. Which of the following is not a sever type?
 - a. Iterative server
 - b. Concurrent server
 - c. Shared state server
 - d. Concurrent multiplexed server
6. Which of the following two communications protocols guarantees data delivery?
 - a. TCP
 - b. UDP
 - c. IP
 - d. ARP
7. Which of the following two communications protocols guarantees data ordering delivery?
 - a. ARP
 - b. IP
 - c. TCP
 - d. UDP
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
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?
- a. TCP
 - b. IP
 - c. ARP
 - d. 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 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

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

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

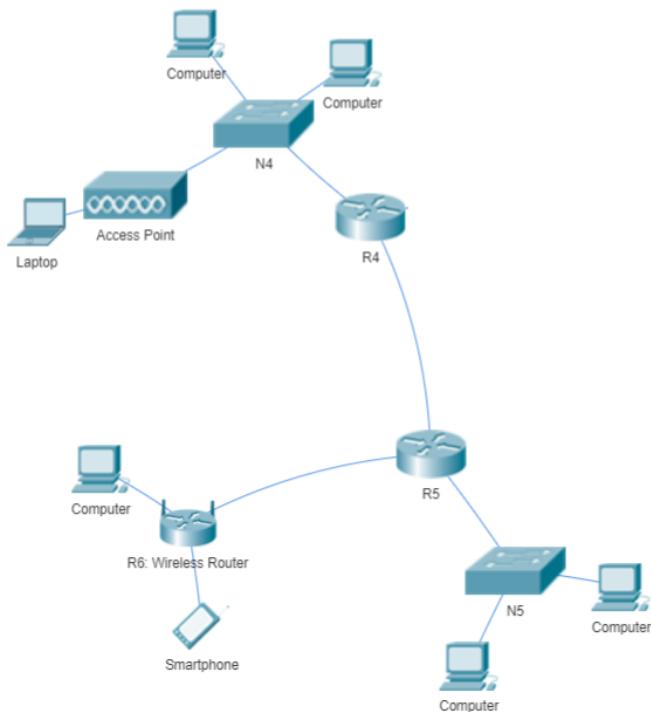
b. 8

c. 14

d. 30

e.

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

Questions

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
- A: b)

3. In C, while creating a TCP socket, SOCK_STREAM is used

True / False

A: True

4. TCP means

- a) Transmission Control Protocol
 - b) Transit Chanel Protocol
 - c) Text Coupled Protocol
 - d) Telephony Control Protocol
- A: a)

5. A wireless device can be connected to the network through a router

True / False

A: False

6. IP/RIP is a distance-vector routing protocol

True / False

A: True

7. DHCP can be set up on a router

True / False

A: True

8. 192.168.0.101 is of class

a) A

- b) B
 - c) C
 - d) D
- A: c)

9. The default hostname for the address 127.0.0.1 is

- A: localhost

10. IPV6 uses

- a) 128 bits
 - b) 32 bits
 - c) 16 bytes
 - d) 4 bytes
- A: a) and c)

Proposed Questions

Lucaciu Catalin 924

1 Q: Which is the Port number used by Network Time Protocol (NTP) with UDP? A: 123

2 Q: Considering the OSI Ref. Model, what's the first layer where we can talk about IP protocol? A: The Network Layer

3 Q: What's the minimum number of interfaces a router should have?
A: It should have a minimum of 2 interfaces.

4 Q: What is a solution for "Flat Addressing"?
A: Classfull IP Addressing and CIDR

5 Q: How many networks can we have in the Class A of ip addressing?

$$2^8$$

A: = 256 networks

6 Q: Consider a block with 32 addresses. Can it begin with 193.226.40.96? A: Yes, $96\%32 == 0$

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)

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)

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, and we need 256 only for computers, each network should have at least 2 reserved IP addresses. The answer is no.

Computer Networks Proposed Questions

1.

In TCP paradigm, which of the following system calls are blocking calls?

- a. b. c. d. bind()

accept() connect()

above
all of the

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.
 - c. 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. b. c. d. socket()
 - b. bind() connect()
 - c. accept()
4. In TCP communication, which of the following system calls are common to both server and client?
- a. b. c. d. listen()
 - b. bind() close()
 - c. socket()
5. Which of the following is not a sever type?
- a. b. c. d. server
 - b. Iterative server Concurrent multiplexed server
 - c. Concurrent server
 - d. Shared state
6. Which of the following two communications protocols guarantees data delivery?
- a. b. c. d. IP
 - b. TCP UDP ARP
7. Which of the following two communications protocols guarantees data ordering delivery?
- a. b. c. d. TCP UDP
 - b. ARP IP
8. Which of the following implementations of a concurrent TCP server have interdependent states between clients?
- a. b. Select
 - b. Fork/Pro system
 - c. ccesses call None
 - d. Threads of the
 - e. above
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
- function of DHCP?
10. What is the main
- 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?
- a. b. c. d. ARP UDP
- TCP IP
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 use a variable length mask
13. Which of the following network components broadcasts the message to all the network?
- a. b. c. d. hub
- router DHCP
server
switch
14. Which of the following system calls are optional at the level of a TCP client?
- a. b. c. d. connect()
- socket() none of the
listen() above
- SOCK_STREAM indicate?
15. What type of connection does
- Closed
- a. b. c. d. connection
- TCP
- Open
- connection
- connection
- UDP
- connection

16. valid private addresses?

Which of the addresses are

9.255

a.

10.255.18

b. 192.168.255.0

c. d. 172.16.1

172.168.0.0

10.0

17. IP netmask combination?

Which of the following is a valid

89.56.43.192/255

a. b. c. d.

255.255.0

168.220.186.8/22

7.68.3.128/255.25

5.255.255.192

5.255.192

156.186.192.8/25

5.255.255.252

18.

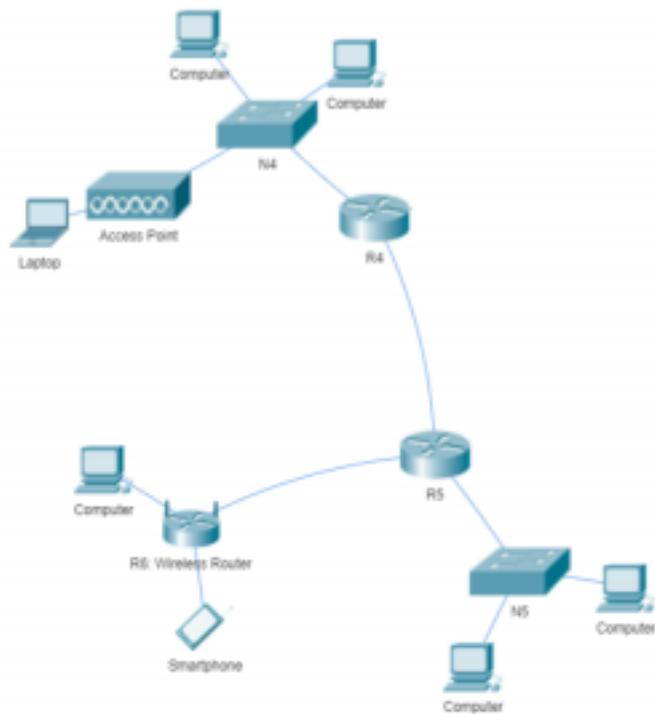
The maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.240 subnet mask is:

a. b. c. d. 16 8

e. 14 30

How many subsets are in
the given diagram:

19.



- | | |
|---|----------|
| a | c |
| . | . |
| b | d |
| . | . |
| 2 | 4 |
| 3 | <u>5</u> |

20. contained by a routing table?

Which of the following are not

- a. b. c. d. address
- interface gateway
- netmask
- source

Questions

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

A: b)

3. In C, while creating a TCP socket, SOCK_STREAM is used

True / False

A: True

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- a) Transmission Control Protocol
- b) Transit Chanel Protocol
- c) Text Coupled Protocol
- d) Telephony Control Protocol

A: a)

5. A wireless device can be connected to the network through a router

True / False

A: False

6. IP/RIP is a distance-vector routing protocol

True / False

A: True

7. DHCP can be set up on a router

True / False

A: True

8. 192.168.0.101 is of class

- a) A
- b) B
- c) C
- d) D

A: c)

9. The default hostname for the address 127.0.0.1 is A:

localhost

10. IPV6 uses

- a) 128 bits
 - b) 32 bits
 - c) 16 bytes
 - d) 4 bytes
- A: a) and c)

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

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**

1. With TCP, one party can overflow the other

- a) True
- b) False -C

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 -C

3. The recvfrom system call returns the source socket

- a) True -C

- b) False

4. Find the maximum number of subnets in which we can split the network 3.4.5.0/24 such that addresses 3.4.5.192 and 3.4.6.248 would be in the same subnet.

- a) 4
- b) 2

c) 49 - C (16 +1 +16 +16)

d) 50

5.What layer from the OSI model has frames as data units?

a) Transport layer

b) Network layer

c) Datalink layer - C

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 - C

7. How long is an IPv6 address?

a) 4 bytes

b) 32 bytes

c) 16 bytes - C

d) 8 bytes

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

a) arp /a -C

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 -C

b) 209.220.186.9/255.255.255.0

c) 209.220.186.8/255.255.255.248 -C

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 -C

b) data loss needs to be avoided

c) bandwidth-intensive transport -C

d) none of the above

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 language that is used to describe web pages. -C

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 -C

d) 012FE4

13. For error detection in TCP/IP we use?

- a) Bit sum
- b) Check sum -c
- 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
- c) 16
- d) 8

16. ARP can be used for :

- a) Mapping network addresses to physical addresses -C
- 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 -C

d) letter

18.Which of the following is not done by

- TCP?
- a) delivery confirmation
 - b) flux control
 - c) broadcasting -C
 - d) keeping the order of the bytes sent

Questions for the Computer Networks Written Exam

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**
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
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

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**

14. Data communication system within a building or campus is

- ____: **A) LAN**
- B) WAN

C) MAN

D) PAN

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

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) locator
24. Which field helps to check rearrangement of the fragments? A) **offset**
- B) flag
 - C) TTL
 - D) identifier
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

(10/13 au fost selectate)

1.In case three duplicate acks are received

- a) congestion is present, the congestion window is cut in half and grows linearly X
- 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) X
- 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 X

4.The SOA header of a DNS record contains the following entries:

- a) serial no, refresh interval, update entry, expiry, minimum or TTL X
- 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

5.SMTP is

- a) an offline protocol X
- b) built on top of TCP X
- c) built on top of UDP
- d) on the same level as FTP, HTTP and DNS X

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 X
- 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 X
- b) a new connection was established (socket was in listening mode) X
- c) enough space is available for writing
- d) there is an error pending X

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 X
- 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 X
- 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 X
- 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 X
- 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 X
- 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. Can the network 220.190.100.0/31 host at least one computer? (No)
2. Which of the following may be used on a SOCK_STREAM socket? (All)
 - a. send
 - b. recv
 - c. sendto
 - d. recvfrom
3. Pick from the following to which is best suited TCP over UDP? (a b)
 - a. e-mail
 - b. file transfer
 - c. audio call
 - d. video streaming
4. Which layer sets the data in frames? (b)
 - a. Physical layer
 - b. Data link layer
 - c. Network layer
 - d. Transport layer
5. What is the MAC broadcast address? (b c)
 - a. 255.255.255.255
 - b. ff.ff.ff.ff.ff
 - c. 255.255.255.255.255.255
 - d. it doesn't exist
6. You connect a switch to another switch with (b)
 - a. copper straight-through cable
 - b. copper cross-over cable
 - c. serial cable
 - d. USB cable
7. Can 140.192.160.192/25 be a valid network address? (No)
8. Does a 194.100.0.0/16 network address correspond to class B? (No)
9. Which of the following messages are due to ICMP? (a b)
 - a. destination host unreachable
 - b. destination host unknown
 - c. sender host unreachable
 - d. request timed out
10. Which is the maximum value set for TTL? (255)
11. The following code

```
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);  
}
```

is a: (c)

- a. concurrent multiplexed server
- b. concurrent server
- c. iterative server
- d. Client

12. Pick the possible net masks that would make 192.168.2.0 a valid network address (b c)

- a. /22
- b. 255.255.255.0
- c. /23
- d. 255.255.255.255

13. A TCP header is larger than a UDP header by how many bytes? (12)

14. Which OSI layer contains the HTTP protocol?

- a. data link layer
- b. network layer
- c. transport layer
- d. application layer

15. What command would you use to check the connection between two computers in a network? (c)

- a. ipconfig
- b. arp
- c. ping
- d. connect

16. Choose the correct statement (b c)

- a. the server needs to know the client's ip and port before a connection is made to ensure it knows how to send the responses
- b. the client needs to know the server's ip and port before a connection is made to ensure it knows how to send the requests
- c. the server doesn't need to know the client's ip and port because it will receive them via the accept socket call
- d. the client doesn't need to know the server's ip and port because it will receive them via the connect socket call

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

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 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

(correct = A)

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 transmitted via ICMP ?

- a) no memory left; b) destination host undefined; c) destination host unreachable; d) bad IP header (correct = C and D)

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
- (correct = C)

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

(correct = A, C)

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

(correct = B)

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)

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

(correct = B)

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
- 6) Some protocols of the Application Layer are:
- a) HTTP
 - b) TCP
 - c) ARP
 - d) Bitcoin
- 7) A DNS Server translates IP addresses to domain names:
- a) True
 - b) False
- 8) For RIPv2:
- a) it supports only class full networks
 - b) does not provide trigger updates
 - c) its hop count limit is 15
 - d) it is configured on the router
- 9) The ARP Protocol 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

11) The Traceroute tool uses IP TTL to trace packet paths:

- a) True**
- b) False

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;

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;

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; *

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;

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

1. In which application(s) is data loss tolerated? (b, d)

- 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)

- a. TCP server
- b. UDP server
- c. TCP client
- d. UDP client

4. How many layers does the OSI Reference Model have? (c)

- a. 5
- b. 6
- c. 7
- d. 4

5. TCP, UDP are in the: (b)

- 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) a. 1 bit

b. 7 bits

c. 4 bits

d. 2 bits

7. Which of the following is a Natural Mask? (b)

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?

(b)

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)

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)

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

a,b,d correct answers

2)Wich of the following interconnection devices don't have Ethernet

switches: a)traffic isolation

b)cut through

c)plug and play

d)optimal routing

d correct answer

3)Which layer from the OSI Reference Model handles flow control

a)Aplication

b)Session

c)Presentation

d)Data Link

d correct answer

4)Which address 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

b correct answer

5)When is the TCP syn flag set to 1:

a)at connection request

b)at connection close

a is the correct answer

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

a b c d are the correct answers

7)Which protocols from the following are not application level protocols

a)HTTP

b)SMTP

c)DNS

d)RIP

d is the correct one

8)Which port is used for the SMTP Protocol

a)20

b)21

c)25

d)26

c is the correct answer

9)ICMP type for ping

a)0

b)4

c)8

d)12

a and c are the correct answers

10) What is Address Resolution Protocol used for

- a) finding the network address
- b) finding the MAC address
- c) finding subnet addresses
- d) finding resolution
- e) finding Nemo

b is the correct answer

11) A mobile user, passing through multiple access points

has a) high mobility

b) low mobility

a is correct answer

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

a,b,c,d are correct answers

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

Correct answer: C. Trunk 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

Correct answer: B and D

3. When do we use recv ?

- A. when we use TCP
 - B. when we use UDP
- Correct answer: A. when we use TCP
-
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

Correct answer: D and C

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.

Correct answer: A, B, C and D

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

Correct answer: 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

Correct answer: B. HostName.Domain.TLD

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. $2^{32} - 2$

Correct answer: B and C

1. Which of the following statements are not true about the UDP API?

• It read bytes from one packet

• Listen and accept are required ✓

- Doesn't guarantee for datagram delivery or ordering
- Bytes not read from the packet stay available for the next read ✓

2. Which of the following statements about DNS are true? • The correct naming configuration is: Domain.HostName.TLD • DNS is an application layer protocol ✓

- DNS stands for Dynamic Naming System
- A DNS server can be a default gateway ✓

3. What is the maximum data rate for a 2 kHz channel with binary signals? R:
4000

4. Which of the following are part of the TCP/IP Model?

- Application ✓
- Presentation
- Data Link
- Physical

5. The natural mask for a class B address is:

- 255.255.0
- 255.0.0.0
- 255.255.0.0 ✓
- 255.255.255.0

6. How many bits does the source IP address occupy in the IP Datagram? • 64 bits

- As many as the destination IP address does ✓
- As many as the Header Internet Checksum does
- 32 bits ✓

7. Which statements are true about the SMTP?

- It allows for online message exchanging
- It stands for Simple Mail Transfer Protocol ✓
- Its server port is 25 ✓

8. Which of the following statements are false about NAT?

- It stands for Network Address Transcription ✓
- Just one IP address is used for all devices in the local network as seen from the outside world
- You need to notify the outside world for any change of address in the local network ✓

- Does not bring any security benefit ✓

9. ICMP Echo and Reply are used by Ping in order to determine if a host is up •

True ✓

- False

10. What happens after receiving one duplicate Acknowledgment?

- Congestion Window is cut in half
- Congestion Window is set to 1 MSS
- Congestion Window is doubled

R: none of the answers are correct

11. When the Congestion Window is below the Threshold:

- The window grows linearly
- The window is set to 1 MSS
- The window grows exponentially ✓

12. What is the port on which the HTTP works?

R: 80

13. Which of the following statements about FTP are true?

- It uses 4 channels: control, data, active, passive
- It uses 2 channels: control, data ✓
- It uses 2 channels: active, passive
- It uses 3 channels: control, active, passive

14. Which port(s) are used in the FTP?

- Port 20 ✓
- Port 25
- Port 30
- Port 21 ✓
- Port 31

15. 127.0.0.1 can be:

- A network address
- A broadcast address
- Set as default gateway ✓

- 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 T

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. T

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. T

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) $\sim 2^8 + 2^{16} + 2^{24}$ T

b) $\sim 2^{32}$

c) $\sim \text{factorial}(2^{32})$

d) $\sim \text{combinations of } 2^{32} \text{ taken } 2$

- 6) What happens 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 T
- 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 T
- 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 T
- 10) What are the 3 levels of hierarchy of IP Subnet
a) network, subnet, host portions T
b) network, masks, host portions
c) host, subnet, network portions T
d) host, masks, network portions

Computer Networks Questions (**correct answers in bold**):

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.**

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.**

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 abbreviations represents a network type:

-HAN

--PAN

--MAN

-FAN

-DAN

--WAN

Computer Networks Questions

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

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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

19. 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

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. correct

c)CPUs nowadays aren't powerful enough. correct

d)we cannot have routers with 2^{32} routing tables able to route all the traffic which goes through them
correct

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 diffuse messages to a subset of machines,similar to distribution with subscription

correct d)110,they are assigned to private networks

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 correct

In the case of class full IP Addressing, what is the largest routing table we can have?

a) 2^{32}

b) 2^{16}

c) $2^7 + 2^{14} + 2^{21}$ correct

d) $2^8 + 2^{16}$

What is the disadvantage of class full IP Addressing?

- a)address space exhaustion correct
- b)Not enough addresses available in a class.
- c)inefficient use of address space correct
- d)too large routing tables

Broadcast can get through a router.

- a)True
- b)False correct

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
- correct c)It can't store information about each network individually.
- d)In order to group all networks for a specific client together.

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. correct

c)Yes, since the network address is not routed in Internet. correct

d)Yes, only if the ISP is different.

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 correct

d)192.168.1.0 255.255.255.0

What is the more common name of the MAC Layer?

a)Internet layer

b)Session layer

c)physical layer

d)data link layer correct

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 correct

c)the number of routers allowed to pass until discarded, represented on 1 byte correct

d)the transport time layer and it is represented on 8 bytes

Frames get reassembled before reaching their destination.

- a)True
- b)False correct

IP checksum is a type of error correction code.

- a)True
- b)False correct

How does ARP find a destination MAC address?

- a)using multicast
- b)through broadcast in the LAN correct
- c)it isn't used to find destination MAC addresses
- d)using the default gateway in the LAN

What are exchange units called at the level of the Application layer?

- a)frames
- b)datagrams
- c)packets

d) data structure correct

How many bytes does the header take in an IP datagram?

- a) 4 bytes
- b) 16 bytes
- c) 20 bytes correct
- d) 8 bytes

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. correct
- c) A message is sent to the source address if the packet doesn't fit the mtu of a passing data link layer. correct
- d) It is fragmented only when reaching the destination

Pop Bogdan-Petru

1)

Q: What is the broadcast address of host 80.128.152.64/24's network?

A: 80.28.152.255

2)

Q: How many host addresses are in a /30 network?

A: 2

3)

Q: 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

A: b)

4)

Q: Which is the lowest layer of the OSI stack?

- a) Physical
- b) Network
- c) Application
- d) Data link

A: a)

5)

Q: Which of the following has the largest number of bits?

- a) IPv4 address
- b) IPv6 address
- c) MAC address

A: b)

6)

Q: Which is not a layer of the OSI stack?

- a) Physical
- b) Application
- c) Network
- d) UDP

A: d)

7)

Q: 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

A: c)

8)

Q: What is the unit exchanged at network level in the OSI stack?

- a) Packet
- b) Bit
- c) Frame
- d) APDU

A: a)

9)

Q: A router can be used as a DHCP server (True/False)

A: True

10)

Q: A DHCP server can assign MAC addresses to computers in its network (True/False)

A: False

11)

Q: TCP retransmits lost packages (True/False)

A: True

12)

Q: UDP data is:

- a) reliable
- b) ordered
- c) lightweight

A: c)

13)

Q: Which one of the following services is loss-tolerant?

- a) e-mail
- b) real time video
- c) file transfer
- d) instant messaging

A: b)

14)

Q: 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)

15)

Q: Sliding window protocol is used by:

- a) TCP
- b) UDP

A: a)

Computer Networks Exam Questions

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 is the most usual type of wire which connects stations. What about

switches? 2)Describe a bus type link

3)When should you use statistical multiplexing? Why?

4)What delay would you expect if you want to send a packet of 7.5Mbits from point A to point B

passing through 2 routers with links of 1.5Mbps(trace: A->router->router->B).Explain the answer

5)Name 2 things which the app-layer protocol defines.

6)Describe the client-server paradigm

7)How do processes communicate to each other?

8)What is a socket ?

9)Describe how would a "client" would communicate with a "server" using TCP.

10)What conditions must a socket satisfy in order to be able to read from it ?

Primele 20 nu sunt acceptate

1. What system call is used to create a new process in Linux?
 - a. wait
 - b. fork
 - c. kill
 - d. 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
a.	write()	read()
	write()	read()
	read()	write()
b.	write()	write()
	write()	read()
	read()	write()
c.	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?
- Yes
 - No
2. When computing the checksum, the value of the checksum field is:
- 0
 - 0xffff
 - 65535
 - 42
3. If a packet is larger than the MTU (Maximum Transmission Unit) it is fragmented in:
- More TCP packets
 - More HTTP packets
 - More IP packets
 - More UDP packets
4. IP packets that have been segmented will be reassembled at:
- The destination
 - The next hop with a large enough MTU
 - The default gateway
5. Which of the following is the TCP handshake:
- SYN, ACK/FIN

SYN/ACK, SYN, FIN

SYN, SYN/ACK, ACK

SYN, SYN/ACK, FIN

6. The traceroute command works by:

Using RIPv2 queries

Gradually increasing TTL

Using ARP messages

Receiving ICMP Time Exceeded

7. TCP and UDP can use the same port at the same time:

True

False

8. When are we guaranteed to receive the data in a UDP packet in the same order it was sent?

Never

When the length of the packet is below the minimum MTU in the route

Always

When the destination is on the same network as the source

9. DHCP is implemented over:

TCP

IP

ICMP

UDP

10. WHOIS is:

A system command that shows the username of the user that calls it

A protocol used to query domain name information

A system command and protocol that shows info about a local or remote user