2021-2022

TD-1 : Généralités

1- Which of the followings are network reference models ? (Choose 2 answers)
   a. TCP/IP
   b. DIX
   c. OSI
   d. ALOHAnet

2- How many layers does the OSI network reference model have ?
   a. 8
   b. 7
   c. 6
   d. 5

3- Which of the following protocols are examples of TCP/IP transport layer protocols? (Choose 2 answers)
   a. Ethernet
   b. IP
   c. UDP
   d. TCP

4- An application creates a data at the application layer. This data is passed to lower layers and each layer adds a new header to the data. The data link layer (layer 2) adds a header and trailer. What is this process ?
   a. Data encapsulation
   b. Data process
   c. The OSI Model
   d. All of these answers are correct

5- Which OSI layer defines the functions of logical network-wide addressing and routing ?
   a. Layer 1
   b. Layer 2
   c. Layer 3
   d. Layer 4

6- Which of the following is true about the cabling of a typical modern Ethernet LAN ?
   a. Connect each device in series using coaxial cabling
   b. Connect each device in series using UTP cabling
   c. Connect each device to a centralized LAN hub using UTP cabling
   d. Connect each device to a centralized LAN switch using UTP cabling

7- Which pairs of devices in the followings would require a straight-through UTP cable ? (Choose 2 answers)
   a. PC and router
   b. PC and switch
   c. Hub and switch
   d. Router and switch

8- Which of the following is true about half-duplex communication ?
   a. No collisions hapen
   b. Collisions can happen and resolved by CSMA/CD algorithm
   c. The communication can only happen in one direction
   d. None of the other answers is correct

9- Which of the following is a collision domain ?
   a. All devices connected to an Ethernet hub
   b. All devices connected to an Ethernet switch
   c. All devices connected to a router
   d. None of the other answers is correct

10- Which of the following is a broadcast domain ?
   a. All devices connected to an Ethernet hub
   b. All devices connected to an Ethernet switch
   c. All devices connected to a router
   d. None of the other answers is correct

11- Which of the following Ethernet addresses can be used to communicate with more than one device ?
   a. Burned-in address
   b. Unicast address
   c. Broadcast address
   d. Multicast address

12- Which of the following is one of the functions of OSI Layer 2 protocols ?
   a. Framing
   b. Delivery of bits from one device to another
   c. Error recovery
   d. Defining the size and shape of Ethernet cards

13- Which of the following are not valid Class A network IDs ? (Choose 2)
   a. 1.0.0.0
   b. 130.0.0.0
   c. 127.0.0.0
   d. 9.0.0.0

14- Which of the following are valid C unicast IP adress ?
   a. 1.1.1.1
   b. 200.1.1.1
   c. 192.168.5.0
   d. 223.223.223.255

15- What is the range of values for the first octet for Class A IP networks ?
   a. 0 to 126
   b. 1 to 127
   c. 1 to 126
   d. 128 to 191

16- Which of the following does a router normally use when making a decision about routing IP packets ?
   a. Destination MAC address
   b. Source MAC address
   c. Destination IP address
   d. Source IP address

17- Which of the following is not a feature of a protocol that is considered to match OSI Layer 4?

a. Error recovery
b. Flow control
c. Segmenting of application data
d. Conversion from binary to ASCII

18- Which of the following are functions of a dynamic routing protocol ? (Choose 2 answers)

a. Advertising known routes to neighboring routers
b. Learning routes for subnets directly connected to the router
c. Learning routes, and putting those routes into the routing table, for routes advertised to the router by its neighboring routers.
d. To forward IP packets based on a packet's destination IP address

19- Which of the following protocols allows a client PC to discover the IP address of another computer based on that other computer's name (URL) ?

a. ARP
a. ICMP
b. DNS
c. DHCP

20- Which of the following protocols allows a client PC to request assignement of an IP address as well as lern its default gateway ?

a. ARP
b. ICMP
c. DNS
d. DHCP

21- In a LAN, which of the following terms best equates to the term VLAN ?

a. Collision domain
b. Broadcast domain
c. Subnet
d. Switch layer 2

22- PC1, PC2 and PC3 are connected via switches. PC1 and PC2 are in VLAN1, while PC3 is in VLAN 2. Which following statement is true ?

a. PC1 can ping PC2
b. PC1 can ping PC3
c. PC2 can ping PC3
d. PC1, PC2 and PC3 are NOT in the same physical LAN

23- Which following statement is true about TCP and UDP ?

a. UDP provides a connection-oriented service
b. TCP provides a connection-oriented service
c. TCP service is always reliable
d. UDP service is always reliable

24- Which of the following statements describes part of the process of how a LAN switch decides to forward a frame with a broadcast MAC address ?

a. It compares the unicast destination address to the MAC address table
b. It compares the unicast source address to the MAC address table
c. It forwards the frame out all interfaces except for the incoming interface
d. It compares the destination IP address to the destination MAC address

25- In the LAN for a small office, some user devices connect to the LAN using a cable, while others connect using wireless technology (and no cable). Which of the following is true regarding the use of Ethernet in this LAN ?

a. Only the devices that use cables are using Ethernet
b. Only the devices that use wireless are using Ethernet
c. Both the devices using cables and those using wireless are using Ethernet.
d. None of the devices are using Ethernet

26- Match the slash format prefix number with the decimal mask number to subnet the last octet.

Slash-format prefix number	Decimal mask numbers
/24	128
/25	252
/26	224
/27	0
/28	248
/29	192
/30	240

27- Determine the network and broadcast addresses and number of host bits and hosts for the given IPv4 addresses and prefixes in the following table?

IPv4 Address/Prefix	Network Address	Broadcast Address	Total Number of Host Bits	Total Number of Hosts
192.168.100.25 /28	.16	.31	4	14
172.30.10.130 /30	.128	.131	2	2
10.1.113.75 /19	.96.0	.127.255	13	(2^13)-2
198.133.219.250/24	.0	.255	8	254
128.107.14.191 /22	12.0	.15.255	10	(2^10)-2
172.16.104.99 /27	.96	.127	5	(2^5)-2

28- A network engineer needs to create eight equal-sized subnets starting from the 192.168.1.0/24 network. How does he do it ?

IPv4 Address/Prefix	Network Address	Broadcast Address	Total Number of Host Bits	Total Number of Hosts
192.168.1.0 /24	Actual network			
192.118.1.0 /27	<=	.31	5	(2^5)-2
192.118.1.32 /27	<=	.63	5	(2^5)-2
192.118.1.64 /27	<=	.95	5	(2^5)-2
192.118.1.96 /27	<=	.127	5	(2^5)-2
192.118.1.128 /27	<=	.159	5	(2^5)-2
192.118.1.160 /27	<=	.191	5	(2^5)-2
192.118.1.192 /27	<=	.223	5	(2^5)-2
192.118.1.224 /27	<=	.255	5	(2^5)-2