25/4/2017

شبكات الحاسوب

Key

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11 - 12

Key الاسم

Part 1: Choose the correct answer **8 points**

1) _____ is an example of an IPv6 address
a) **2001:260::2ed3:340:ab** b) 00-13-02-29-AG-6C c)192.168.0B.1F d) 200.13.4.0/26

2)Dynamic addressing
a) **can solve many updating headaches for network managers who have large, growing, changing networks**
b)assigns a permanent network layer address to a client computer in a network
c)makes network management more complicated
d)is always performed for servers only

3) In _____ routing, the least cost route between any two nodes is the route with the minimum distance
a) path vector b) **distance vector** c) link state d) none of the above

4)Two channels, the first is with bit rate of 200 kbps and another with bit rate of 600 kbps, are to be multiplexed using multiple slots TDM with no synchronization bits and 1- bit interleaved. What is the frame rate?
a) **200k f/s** b) 1000K f/s c) 600K f/s d) 800K f/s

5)Synchronous transmission
a) uses stop bits after each character to be sent
b) **is used to transmit a frame or packet of data at a time**
c)is used to send one character at a time
d) uses start bits before each character to be sent

6)What is the maximum actual user data rate for a device connected to a T1 line?
a) 64 Kbps b) 218 Kbps c) **1.536 Mbps** d) 3)152 Mbps

7) The sharing of a medium and its link by two or more devices is called _____
a) Modulation b) Encoding c) **Multiplexing** d) Line discipline

8)If the frequency spectrum of a signal has a bandwidth of 500 Hz with the lowest frequency at 600 Hz, what should be the n sampling rate, according to the Nyquist theorem?
a) **2200** b) 600 c) 1000 d) 1200

9)_____ is used to extend the use of the limited IPv4 address space
a. DHCP b) **NAT** c) DNS d) IPv6

10)Which of the following is not an interior routing protocol?
a)RIP b) **BGP** c) OSPF d) a & c

11)In which type of switching do all the packets of a message follow the same channels of a path?
a) **Virtual circuit packet switching**
c))Datagram packet switching
b)Message switching
d)A and B

12)In packet switched networks, store and forward refers to _____
a)entire message must arrive at router before it can be transmitted on next link
b)scheduling of packets to avoid congestion
c) **entire packet must arrive at router before it can be transmitted on next link**
d)entire packet must be stored on router until acknowledgement received

13)_____ is a group of networks and routers under the authority of a single administration.
a) **An autonomous system** b)internetwork c)closed system d)WAN

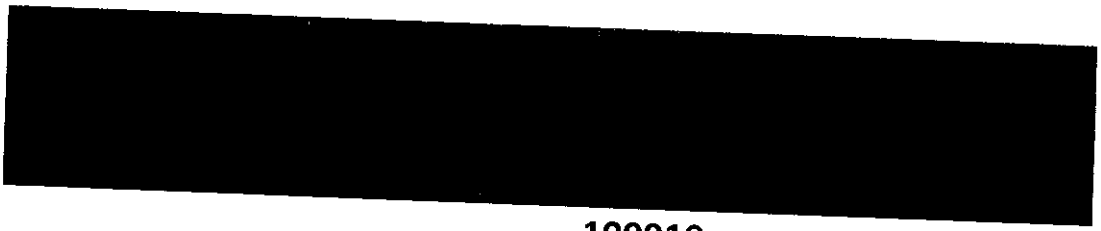
14)The _____ routing uses the Dijkstra algorithm to build a routing table)
a)BGP b) **link state** c)path vector d)all of the above

15) In distance vector routing, each node periodically shares its routing table with _____and whenever there is a_____
a) **Immediate neighbor; change**
c) Immediate neighbor; every 30 seconds
b)all nodes ; change
d) all nodes ; every 30 seconds

16) On a network that uses NAT, the _____ has a translation table
a)switch b)Hub c) Bridge d) **Router**

Part 2

1- The following Figure is Manchester encoding of a data stream. What is the data stream? **1 point**



100010

2- Why is synchronization a problem in data communication? **1 point**

To correctly interpret the signals received from the sender, the receiver's bit intervals must correspond exactly to the sender's bit intervals.
If the receiver clock is faster or slower, the bit intervals are not matched and the receiver might interpret the signals differently than the sender intended

3- Consider a noiseless channel with a frequency range of (4000 Hz – 6000 Hz) transmitting a signal with 4k signal levels. Find the maximum bit rate? **1 point**

$$\text{Bit Rate} = 2 \times \text{Bandwidth} \times \log_2 L$$
$$= 2000 \text{ X } 12 \quad = 24000 \text{ bps}$$

4- A block of addresses 212.0.0.0/28 is granted to an organization. **4 points**

a) Find the subnet mask?
255.255.255.1111 0000 = 255.255.255.240

b) Find the number of addresses in teach block (Subnet)?
The number of addresses is $2^{32-28} - 2 = 14$

c) Find the first and last addresses in the 4th block
The binary representation of the address is
212. 0.0. 0100 0001 to 212. 0.0. 0100 1110
212. 0.0. 65 to 212. 0.0. 78

d) Find the broadcast address of the 4th block?
212. 0.0. 0100 1111 = 212. 0.0. 79

3rd

1st 212. 0. 0. 49

Last 212. 0. 0. 62

5- List 2 advantages of subnetting? **1 point**

Reduce broadcast domain
Reduce collision domain,
Easier to manage
Increase security

6- **Router receives a packet with destination 202.14.17.240, Now use the following routing table to decide the next interface the packet that will use** **1 point**

Mask	Packet destination	Interface
/27	202.14.17.224	M0
/26	202.14.17.224	M1
/28	202.14.17.128	M2
/0	/0	M3

Destination 202.14.17. 1111 000
And
255.255.255.1110 000
202.14.17.224 =→ **M0**

7- A router has the following RIP routing table **5 points**

Destination	Cost	Next Hop
Net1	2	B
Net2	2	C
Net3	1	F
Net4	5	G

old

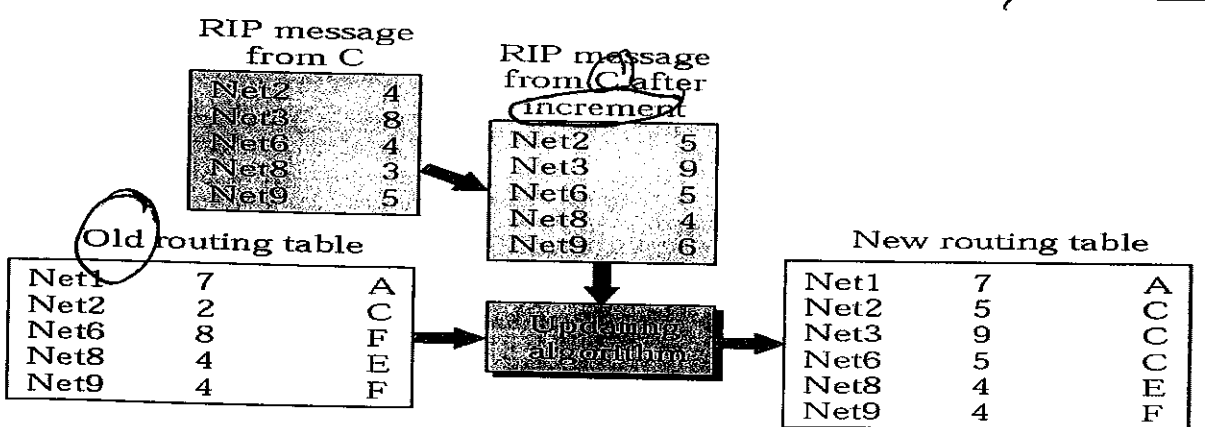
It receives the following RIP message with four records from **router C** as shown below, Show the updated routing table

router C

Destination	Cost
Net1	2
Net2	9
Net3	3
Net4	5
Net 6	4

increment 3 9 4 6 5

Destination	Cost	Next hop	Comments
Net1	2	B	diff next hop, hop count larger, do not change
Net2	10	C	Same next hop, replace
Net3	1	F	diff next hop, hop count Larger, don't change
Net4	5	G	= = = = = =
Net6	5	C	a new router, add



Net1: No news, do not change
Net2: Same next hop, replace
Net3: A new router, add
Net6: Different next hop, new hop count smaller, replace
Net8: Different next hop, new hop count the same, do not change
Net9: Different next hop, new hop count larger, do not change