QUESTION 1

Consider the two broadcasting techniques: minimum spanning tree, and the reverse path forwarding (RPF) techniques. Which of the following is correct?

- ○ The number of edges in the RPF flooding tree is always guaranteed to be = (number of nodes in the network -1)
- ● Broadcasting using the minimum spanning tree causes more efficient use of bandwidth (fewer wasted packets) than does the RPF flooding tree
- ○ Broadcasting using the RPF flooding tree causes more efficient use of bandwidth (fewer wasted packets) than does the minimum spanning tree

QUESTION 2

A router receives a packet with the destination address 197.7.21.84 the network address of the packet is

- ○ 197.7.0.0
- ● 197.7.21.0
- ○ 19.77.0.0
- ○ 0.7.21.84

QUESTION 3

An address in a classful addressing block is given as 180.8.17.9. The number of valid host addresses in that block is .... addresses

- ○ 65536
- ● 65534
- ○ 254
- ○ 256

QUESTION 4

The packets in the following applications are mostly transferred through virtual circuits.

- ○ File Transfer
- ○ Video Conference
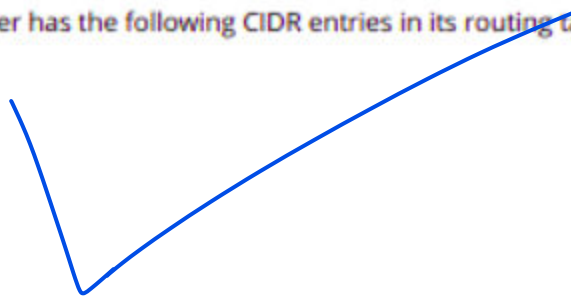- ● None of them
- ○ Online Gaming

QUESTION 5

Suppose you have two hosts (Source , Destination) connected by a sequence of three networks { Source-> NW1 -> NW2 -> NW3-> Destination}.
The three networks have maximum transmission unit MTU of (4 bytes , 5 bytes , and 3bytes accordingly).
The host Source sends a (12 bytes) Payload to Destination, and the header is one byte.
If the networks use non-transparent fragmentation technique, the number of fragments moving in the last subnet { NW3-> Destination} is :

- ○ 7
- ● 8
- ○ 3
- ○ 4

QUESTION 6

A router has the following CIDR entries in its routing table:

Address/mask	Next hop
128.0.0.0/8	Interface 0
128.7.0.0/16	Interface 1
128.31.0.0/11	Interface 2
others	Interface 3

For the incoming packet with destination IP addresses 128.15.33.2, the router will forward it to interface .....

- ○ Interface 3
- ○ Interface 1
- ● Interface 2
- ○ Interface 0

QUESTION 7

Suppose you are to choose a multicasting protocol to be used in a network, where 95% of its nodes are joined in one multicast group. What is the best protocol to choose, considering the tree initialization overhead?

- ○ Both of them are equivalents
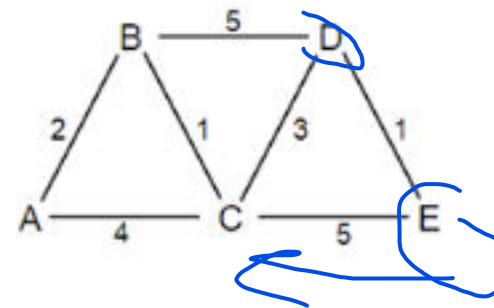- ◉ DVMRP
- ○ PIM Sparse

QUESTION 8

A University is provided by network address 218.35.50.0, the university wants to provide 5 different subnets for its five colleges, using classful addressing subnetting, then the maximum number of usable host addresses after subnetting is:

- ○ 32
- ○ 14
- ○ 16
- ◉ 30

(handwritten: C, 3bit, 8b.t2, 3bit #4 = 2³ − 2 = 30 ✓)

QUESTION 9

Consider a sub-net of five routers {A, B, C, D, and E} as shown above and Link state routing protocol is used. Suppose that Router E has a previous list of the most recent LSP's shown in the table

Source Router ID of LSP	Age	Seq
A	60	18
B	45	20
C	40	15
D	52	25

Suppose the following link-state packet have just come into router E and it is not processed yet. Choose **one answer** from the following, that describe the best E's behavior about it.

LSP Number	Source Router ID of LSP	The Direct Sending Router	Age	Seq.
1	B	D	30	22

(handwritten: √-AC)

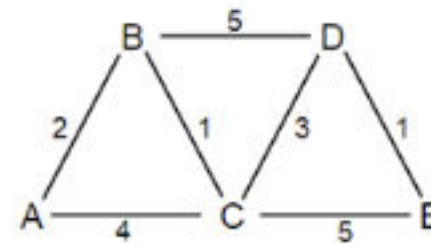- ◉ Accepts 1 and Forwards to C only
- ○ Accepts 1 and Forwards to C and D

QUESTION 10

A University is provided by network address 218.35.50.0, the university wants to provide 5 different subnets for its five colleges, using classful addressing subnetting, then the minimum Custom subnet mask length is:

- ○ 28
- ○ 26
- ○ 24
- ● 27

QUESTION 11

Consider a sub-net of five routers {A, B, C, D, and E} as shown above and Link state routing protocol is used. Suppose that Router E has a previous list of the most recent LSP's shown in the table

Source Router ID of LSP	Age	Seq
A	60	18
B	45	20
C	40	15
D	52	25

Suppose the following link-state packet have just come into router E and it is not processed yet. Choose **one answer** from the following, that describe the best E's behavior about it.

Number	Source Router ID of LSP	The Direct Sending Router	Age	Seq
2	A	D	59	17

- ○ Accepts 2 and Forwards to D only
- ○ Accepts 2 and Forwards to C and D
- ○ Accepts 2 and Forwards to C only
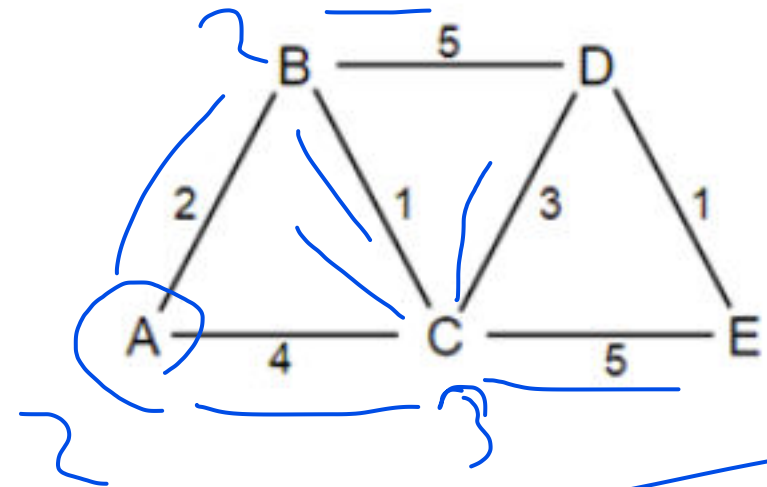- ● Rejects 2

QUESTION 12

Assume having enough resources, high quality of service is more challenging to be achieved in............

- ○ Connection-Oriented
- ● Datagram Networks

QUESTION 13

In the following topology, the number of packets required to send a message from A to D using the pure flooding technique with setting the max hop count=2 is ....

- ● 7 packets
- ○ 2 packets
- ○ 6 packets
- ○ 8 packets

QUESTION 14

The process of subnetting refers to what?

- ○ Borrowing bits from the subnet mask in order to create more sub-networks.
- ○ Borrowing bits from the network portion of the address to create more sub-networks.
- ● Borrowing bits from the host portion of the address to create more sub-networks.