

Quiz Submissions - Third Midterm Exam



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Attempt 1

Written: Apr 9, 2021 8:30 AM - Apr 9, 2021 9:30 AM

Submission View

Released: Mar 12, 2021 3:33 PM

Question 1

0 / 5 points

If wireless links are very reliable (e.g. no bit loss) and very fast (e.g., the transmission speed is 10 Gbps), then CSMA/CD of Ethernet can be used for wireless networks.

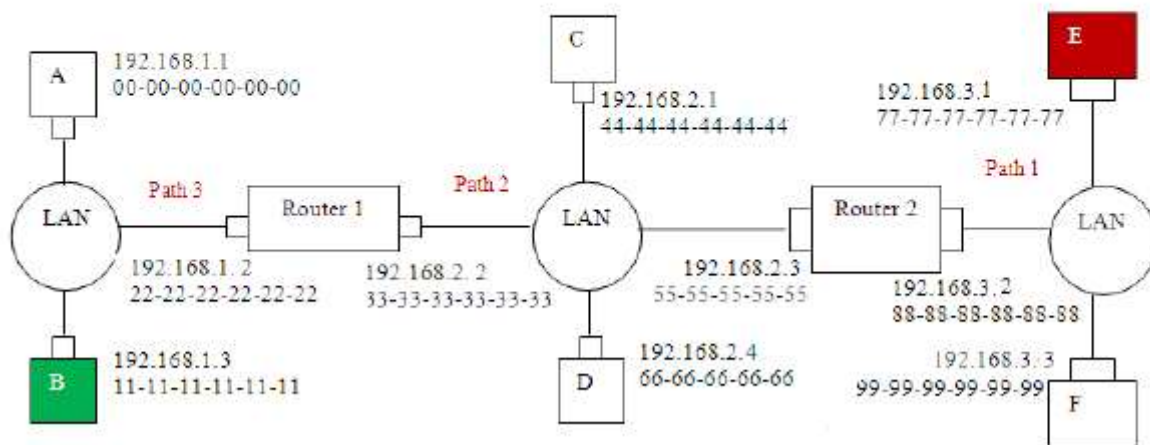
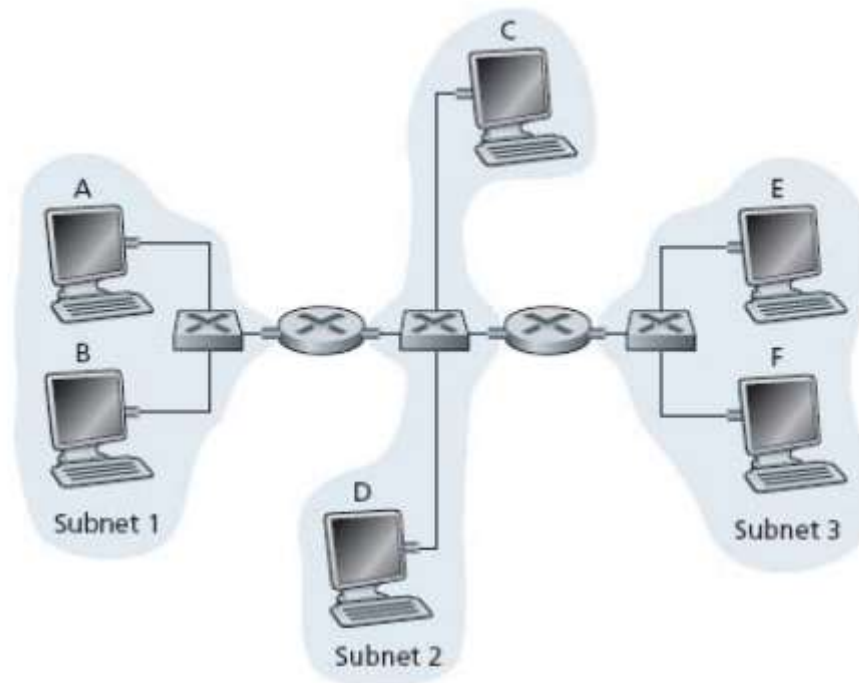
 ☐ True

 ☐ False

Question 2

20 / 20 points

Consider three LANs interconnected by two routers, as shown in the following figure. IP addresses and MAC addresses have been assigned to all of the adapters and interfaces as shown in the figure. Subnet 1 uses addresses of the form 192.168.1.x; Subnet 2 uses addresses of the form 192.168.2.x; and Subnet 3 uses addresses of the form 192.168.3.x.



Consider sending an IP datagram from Host E to Host B. Suppose all of the ARP tables are up to date. Fill the IP addresses and MAC addresses of this packet on different paths (using the **EXACTLY SAME FORMAT** drawn in the figure).

On path 1 (i.e., Host E to Router 2):

The source IP address of this packet is:

___192.168.3.1___ ✓(12.5 %)

The destination IP address of this packet is:

___192.168.1.3___ ✓(12.5 %)

The source MAC address of this packet is:

___77-77-77-77-77-77___ ✓(12.5 %)

The destination MAC address of this packet is:

___88-88-88-88-88-88___ ✓(12.5 %)

On path 2 (i.e., Router 2 to Router 1):

The source IP address of this packet is:

___192.168.3.1___ ✓(12.5 %)

The destination IP address of this packet is:

___192.168.1.3___ ✓(12.5 %)

The source MAC address of this packet is:

___55-55-55-55-55___ ✗ (55-55-55-55-55)

The destination MAC address of this packet is:

___33-33-33-33-33___ ✓(12.5 %)

Question 3

15 / 15 points

The following figure shows the screenshot of an Internet trace file opened in Wireshark. Look at the **FIRST** packet in the trace file. List the following information regarding this packet:

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	Telebit_73:8d:ce	Broadcast	ARP	60	Who has 192.168.1.117? Tell 192.168.1.104
2	4.866867	192.168.1.100	192.168.1.1	SSDP	174	M-SEARCH * HTTP/1.1
3	4.868147	192.168.1.100	192.168.1.1	SSDP	175	M-SEARCH * HTTP/1.1
4	5.363536	192.168.1.100	192.168.1.1	SSDP	174	M-SEARCH * HTTP/1.1
5	5.364799	192.168.1.100	192.168.1.1	SSDP	175	M-SEARCH * HTTP/1.1
6	5.864428	192.168.1.100	192.168.1.1	SSDP	174	M-SEARCH * HTTP/1.1
7	5.865461	192.168.1.100	192.168.1.1	SSDP	175	M-SEARCH * HTTP/1.1
8	6.163045	192.168.1.102	128.59.23.100	ICMP	98	Echo (ping) request id=0x0300, seq=20483/848, ttl=1 (no r...
9	6.176826	10.216.228.1	192.168.1.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
10	6.188629	192.168.1.102	128.59.23.100	ICMP	98	Echo (ping) request id=0x0300, seq=20739/849, ttl=2 (no r...
11	6.202957	24.218.0.153	192.168.1.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
12	6.208597	192.168.1.102	128.59.23.100	ICMP	98	Echo (ping) request id=0x0300, seq=20995/850, ttl=3 (no r...
13	6.234505	24.128.190.197	192.168.1.102	ICMP	70	Time-to-live exceeded (Time to live exceeded in transit)
14	6.238695	192.168.1.102	128.59.23.100	ICMP	98	Echo (ping) request id=0x0300, seq=21251/851, ttl=4 (no r...

▶ Frame 1: 60 bytes on wire (480 bits), 60 bytes captured (480 bits)
 ▶ Ethernet II, Src: Telebit_73:8d:ce (00:80:ad:73:8d:ce), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
 ▶ Address Resolution Protocol (request)

```

0000  ff ff ff ff ff ff 00 80  ad 73 8d ce 08 06 00 01  .....s.....
0010  08 00 06 04 00 01 00 80  ad 73 8d ce c0 a8 01 68  .....s.....h
0020  00 00 00 00 00 00 c0 a8  01 75 00 00 00 00 00 00  .....u.....
0030  00 00 00 00 00 00 00 00  00 00 00 00  .....
  
```

(a) The sender's MAC address (strictly in the format of xx:xx:xx:xx:xx:xx where x denotes a hexadecimal value):

___00:80:ad:73:8d:ce___ ✓(33 %)

The sender's IP address (in the dotted-decimal notation):

___192.168.1.104___ ✓(33 %)

The IP address of the next-hop router (in the dotted-decimal notation):

___192.168.1.117___ ✓(34 %)

Question 4

0 / 5 points

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eBGP are gateway routers used for connecting routers external to the AS, and iBGP are gateway routers used for connecting routers internal to the AS.

✗ ☐ True
 ➡ ☐ False

Question 5

0 / 5 points

In IEEE 802.11, different SSID can be assigned to the same AP.

➡ ☐ True
 ✗ ☐ False

Question 6

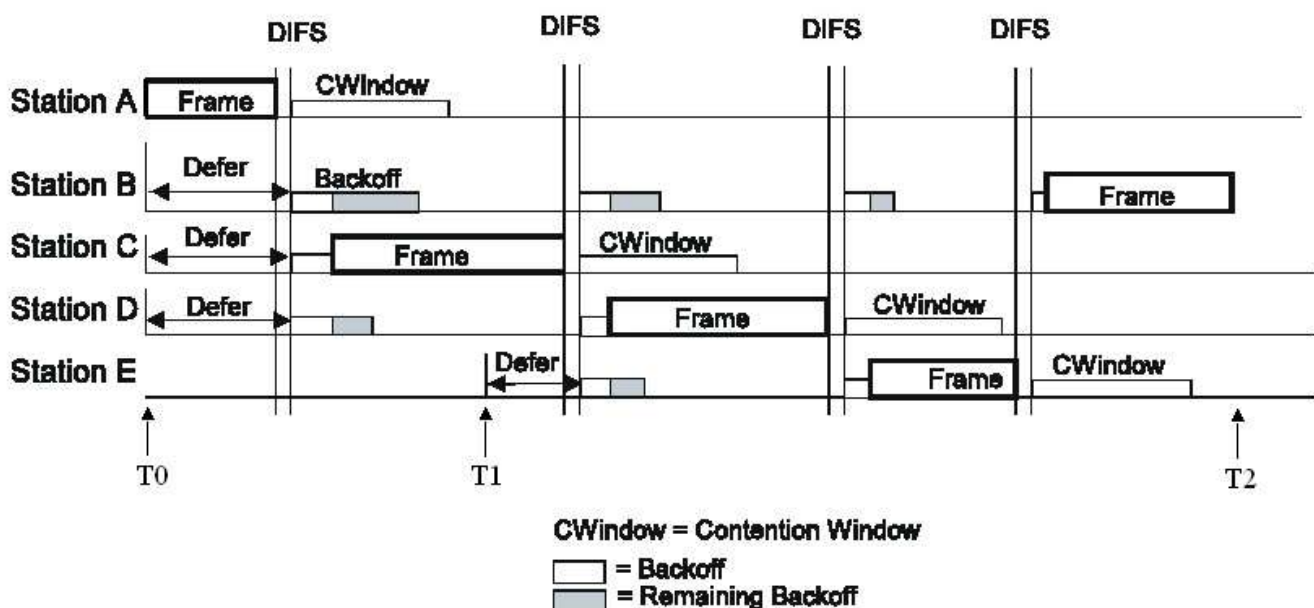
15 / 15 points

On a 10 Mbps Ethernet, assume that the inter-frame-gap (IFG) is 20 microseconds and the preamble is 8 bytes. The maximum frame rate for 512-byte frames is (round up/down to integer value, e.g., 5.5 should be 6 and 5.4 should be 5): (Hint: 20 microseconds on a 10 Mbps Ethernet is equivalent to 200 bits) 2294 ✓ frames per second.

Question 7

0 / 20 points

The following figure shows an example of the DCF operation of IEEE 802.11. Assume that the size of the data frames is the same: 2000 bits. Assume that the size of ACK frames is the same: 100 bits. Assume that four-way handshake (RTS/CTS/DATA/ACK) is used and the size of RTS and CTS frames is the same: 50 bits. Assume that the data frames are not fragmented. Assume that the channel speed is 2 Mbps. Assume that DIFS is equal to 5 microseconds. Assume that SIFS is equal to 3 microseconds. Assume that the initial backoff values (translated to time) of stations B, C, D are 100 microseconds, 50 microseconds, 70 microseconds, respectively. Assume that the backoff value (translated to time) of station E at point T1 is 40 microseconds.



The duration of "Frame" period in the figure is:

2209 ✗ (1109)

microseconds.

The duration from T0 to T2 is

___430___ ✖ (5665) microseconds.

Question 8

5 / 5 points

The hot-potato routing algorithm in BGP always leads to the shortest path from the source node to the destination node.

☐ True

✓ ☒ False

Question 9

10 / 10 points

Assume that on a 1 Gbps Ethernet, the bus cable length is 80 meters. Assume that the signal propagation speed is 2×10^8 meters per second. The minimum frame length in the unit of byte is (only put an integer value in the blank): ___100___ ✓

Attempt Score: 65 / 100 - 65 %

Overall Grade (highest attempt): 65 / 100 - 65 %

Done