Grade Book Detail

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Exercise 1 (Chap 1)

Started: September 21, 2019, 4:40 pm
Last change: September 23, 2019, 6:52 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

ch1-18 Which of the OSI layers handlers each of the following:
(a) Dividing the transmitted bit stream into frames. Data Link Layer
(b) Determining which route through the subnet to use. Network Layer
Show Answer
Show Answer

Question 1: 10 (parts: 5, 5) out of 10 in 5 attempt(s)

Q. A system has an 7-layer protocol hierarchy. Applications generate messages of length 1000 bytes. At each of the layers , an 20 byte header is added. What fraction of the network bandwidth is filled with headers?
A. 12 % (round to integer)
Show Answer

Question 2: 10 out of 10 in 5 attempt(s)

Q. How long was a bit on the original 802.3 standard in meters? Use a transmission speed of 10 Mbps and assume the propagation speed in coax is 2/3 the speed of light in vacuum.
A. 20 meters.
Show Answer

Question 3: 10 out of 10 in 5 attempt(s)

Q.A client-server system uses a satellite network, with the satellite at a height of 40000 km. What is the best-case delay in response to a request?
A. 533 msec
Show Answer

Question 4: 10 out of 10 in 5 attempt(s)

Q. An image is 1024 x 768 pixels with 3 bytes/pixel. Assume the image is uncompressed. How long does it take to transmit it over a 56-kbps modem channel? Over a 1-Mbps cable modem? Over a 10-Mbps Ethernet? Over 100-Mbps Ethernet? (round to three decimal

place)
A. for 56kbps: 337.042 sec
A. for 1Mbps: 18.874 sec
A. for 10Mbps: 1.887 sec
A. for 100Mbps: 0.189 sec

Show Answer
Show Answer
Show Answer
Show Answer

Question 5: 10 (parts: 2.5, 2.5, 2.5, 2.5) out of 10 in 5 attempt(s)

Q. A collection of five routers is to be connected in a point-to-point subnet. Between each pair of routers, the designers may put a high-speed line, a medium-speed line, a low-speed line, or no line. If it takes 100 ms of computer time to generate and inspect each topology, how long will it take to inspect all of them? (give your answer as xxx.xx)
A. 104856.6 seconds
Show Answer

Question 6: 10 out of 10 in 5 attempt(s)

Which of the following description about OSI layers is incorrect?

- The physical layer is concerned with transmitting raw bits over a communication channel
- The data link layer is a true end-to-end layer, all the way from the source to the destination
- The network layer controls the operation of the subnet and determines how packets are routed from source to destination
- The application layer contains a variety of protocols that are commonly needed by users

Show Answer

Question 7: 10 out of 10 in 5 attempt(s)

Which service model is connection-oriented service?

- virtual circuit service
- acknowledged datagram service
- client-server service
- datagram service

Show Answer

Question 8: 10 out of 10 in 5 attempt(s)

What is the name of PDU at the network layer of the OSI reference model?

- message
- frame
- packet
- segment

Show Answer

Question 9: 10 out of 10 in 5 attempt(s)

Some network systems support transmission to a subset of the machines. This mode of operation is called:

- flow control
- congestion control
- multicasting
- broadcasting

Show Answer

Question 10: 10 out of 10 in 5 attempt(s)

Total: 100/100

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Chapter 2 exercise

Started: October 17, 2019, 10:15 am
Last change: October 19, 2019, 7:09 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Q. Television channels are 13 MHz wide. How many bits/sec can be sent if 2-level digital signals are used? Assume a noiseless channel.
A. 26 Mbps
Show Answer 26

Question 1: 10 out of 10 in 1 attempt(s)

Q. If a binary signal is sent over a 8-kHz channel whose signal-to-noise ratio is 17 dB, what is the maximum achievable data rate?
A. 16 kbps
Show Answer 16

Question 2: 9 out of 10 in 2 attempt(s)

Q. 8 signals, each requiring 4000 Hz, are multiplexed on to a single channel using FDM. How much minimum bandwidth is required for the multiplexed channel? Assume that the guard bands are 100 Hz wide.
A: 32700 Hz
Show Answer 32700

Question 3: 10 out of 10 in 1 attempt(s)

Q. Why has the PCM sampling time been set at 125 μsec?

A sampling time of 125usecond corresponds to 8000 samples per second. According to Nyquist theorem, this is the sampling frequency needed to capture all the information in a 4-kHz channel, such as a telephone channel.

Show Answer A sampling time of 125 μsec corresponds to 8000 samples per second. According to the Nyquist theorem, this is the sampling frequency needed to capture all the information in a 4 kHz channel, such as a telephone channel. (Actually the nominal bandwidth is somewhat less, but the cutoff is not sharp.)

Question 4: 0 out of 10 in 1 attempt(s)

Q. What is the percent overhead on a T1 carrier; that is, what percent of the 1.544 Mbps are not delivered to the end user? How about the E1 carrier ?

A. For the T1 carrier: 13 % (give your answer as an integer)

A. For the E1 carrier: 6 % (give your answer as an integer)

Show Answer 13

Show Answer 6

Question 5: 10 (parts: 5, 5) out of 10 in 1 attempt(s)

Total: 39/50

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Grade Book Detail

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Exercise 2 (Chap 2)

Started: September 29, 2019, 12:06 am
Last change: September 29, 2019, 10:36 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Q. Television channels are 18 MHz wide. How many bits/sec can be sent if 256-level digital signals are used? Assume a noiseless channel.
A. 288 Mbps
Show Answer 288

Question 1: 10 out of 10 in 1 attempt(s)

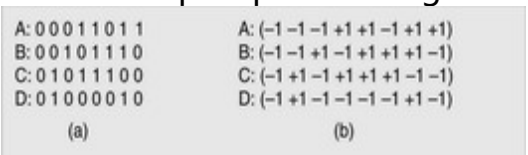
Q. If a binary signal is sent over a 15-kHz channel whose signal-to-noise ratio is 15 dB, what is the maximum achievable data rate?
A. 60 kbps
Show Answer 30

Question 2: 0 out of 10 in 1 attempt(s)

Q. 14 signals, each requiring 5000 Hz, are multiplexed on to a single channel using FDM. How much minimum bandwidth is required for the multiplexed channel? Assume that the guard bands are 200 Hz wide.
A: 72600 Hz
Show Answer 72600

Question 3: 10 out of 10 in 1 attempt(s)

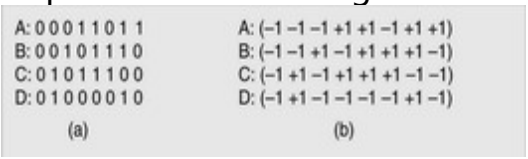
Q. Suppose that A, B, and C are simultaneously transmitting 0 bits, using a CDMA system with the chip sequence of figure following:



What is the resulting chip sequence? give your answer as (+x,-x,-x, ...)
(-4,0,0,0,1,0,1,-1)
Show Answer (+3,+1,+1,-1,-3,-1,-1,+1)

Question 4: 0 out of 10 in 1 attempt(s)

Q. A CDMA receiver gets the following chips: (-1 +1 -3 +1 -1 -3 +1 +1). Assuming the chip sequences defined in figure following,



which stations transmitted, and which bits did each one send?

A. Choise the best answer

- Station A send ◉ sent bit 1 ○ sent bit 0 ○ silence
- Station B send ○ sent bit 1 ◉ sent bit 0 ○ silence
- Station C send ○ sent bit 1 ○ sent bit 0 ◉ silence
- Station D send ◉ sent bit 1 ○ sent bit 0 ○ silence

Show Answer sent bit 1
Show Answer sent bit 0
Show Answer silence
Show Answer sent bit 1

Question 5: 8 (parts: 2, 2, 2, 2) out of 8 in 1 attempt(s)

Q. A signal is transmitted digitally over a 4-kHz noiseless channel with one sample every 125 µsec. How many bits per second are actually sent for each of these encoding methods?

A. 1) CCITT 2.048 Mbps standard: 64 kbps

A. 2) DPCM with a 4-bit relative signal value:
32 kbps

A. 3) Delta modulationard: 8 kbps

Show Answer 64
Show Answer 32
Show Answer 8

Question 6: 6 (parts: 2, 2, 2) out of 6 in 1 attempt(s)

Q. What is the percent overhead on a T1 carrier; that is, what percent of the 1.544 Mbps are not delivered to the end user? How about the E1 carrier ?

A. For the T1 carrier: 13 % (give your answer as an integer)

A. For the E1 carrier: 6 % (give your answer as an integer)

Show Answer 13
Show Answer 6

Question 7: 6 (parts: 3, 3) out of 6 in 1 attempt(s)

Q. A simple telephone system consists of two end offices and a single toll office to which each end office is connected by a 1-MHz full-duplex trunk. The average telephone is used to make four calls per 8-hour workday. The mean call duration is 6 min. Ten percent of the calls are long-distance (i.e., pass through the toll office). What is the maximum number of

telephones an end office can support? (Assume 4 kHz per circuit.)
A. 50000

Show Answer 50000

Question 8: 10 out of 10 in 1 attempt(s)

What is the transmission unit for the physical layer?

- (•) bit
- ( ) frame
- ( ) packet
- ( ) segment

Show Answer bit

Question 9: 5 out of 5 in 1 attempt(s)

A noiseless 2-k Hz channel is sampled every 1 msec. What is the maximum data rate?

- ( ) 1000 bps
- ( ) 2000 bps
- ( ) 4000 bps
- (•) Can be infinite

Show Answer Can be infinite

Question 10: 5 out of 5 in 1 attempt(s)

The cable between toll office and the end office of telephone company are known as the

- ( ) local loop
- (•) trunk
- ( ) microwave line
- ( ) coaxial cable

Show Answer trunk

Question 11: 5 out of 5 in 1 attempt(s)

An T1 channel contains 24 PCM signals, its data rate is

- ( ) 2.048 Mbps
- (•) 1.544 Mbps

- 64 kbps
- 100 Mbps

Show Answer 1.544 Mbps

Question 12: 5 out of 5 in 1 attempt(s)

An E1 channel contains 32 PCM signals, its data rate is

- 2.048 Mbps
- 1.544 Mbps
- 64 kbps
- 10 Mbps

Show Answer 2.048 Mbps

Question 13: 5 out of 5 in 1 attempt(s)

An E1 channel contains 32 PCM time slots, the data rate of each time slot channel is

- 2.048 Mbps
- 1.544 Mbps
- 64 kbps
- 10 Mbps

Show Answer 64 kbps

Question 14: 0 out of 5 in 1 attempt(s)

Total: 75/100

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Exercise 3 (Chap 3)

Started: October 13, 2019, 4:31 pm
Last change: October 14, 2019, 3:42 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Q. A bit string, 0111101111101111110, needs to be transmitted at the data link layer. What is the string actually transmitted after bit stuffing?
A: 011110111110011111010
Show Answer 011110111110011111010

Question 1: 10 out of 10 in 44 attempt(s)

Q. What is the remainder obtained by dividing x^7 + x^5 + 1 by the generator polynomial x^3 + 1? (give your answer as bit string)
A: 111

Show Answer 111

Question 2: 10 out of 10 in 44 attempt(s)

Q.A channel has a bit rate of 4 kbps and a propagation delay of 20 msec. For what range of frame sizes does stop-and-wait give an efficiency of at least 50 percent?
A.160 bits
Show Answer 160

Question 3: 10 out of 10 in 44 attempt(s)

Q.Consider an error-free 64-kbps satellite channel used to send 512-byte data frames in one direction, with very short acknowledgements coming back the other way. What is the maximum throughput for window sizes of 1, 7, 15? The earth-satellite propagation time is 270 msec. (give your answer as an integer)
A.A. for window size=1: 6781 bps
A.A. for window size=7: 47470 bps
A.for window size=15: 64000 bps
Show Answer 6781
Show Answer 47470
Show Answer 64000

Question 4: 9 (parts: 3, 3, 3) out of 10 in 44 attempt(s)

Q.A 100-km-long cable runs at the T1 data rate. The propagation speed in the cable is 2/3 the speed of light in vacuum. How many bits fit in the cable?
A. 772 bits
Show Answer 772

Question 5: 10 out of 10 in 44 attempt(s)

A CRC generator polynomial is G(X)= X^16+X^15+X^2+l. How many bits will the checksum be?

- 14
- 15
- 16
- 17

Show Answer 16

Question 6: 10 out of 10 in 44 attempt(s)

Assume the sequence number has 3 bits. What is the maximum number of outstanding sending frames for a go back N protocol?
7
Show Answer 7

Question 7: 10 out of 10 in 44 attempt(s)

Assume the sequence number has 5 bits. What is the maximum number of outstanding sending frames for a selective repeat protocol?
16
Show Answer 16

Question 8: 10 out of 10 in 44 attempt(s)

Which is not the CSMA / CA rule of 802.11?

- If station X received RTS of station A, X must remain silent for a short time
- If station X received RTS, but did not receive CTS, then X may not transmit its data.
- If station X has not received RTS, but received CTS, then X may not transmit its data
- If station X has received both RTS and CTS, then X may not transmit its data

Show Answer If station X received RTS, but did not receive CTS, then X may not transmit its data.

Question 9: 10 out of 10 in 44 attempt(s)

After the sender first sends frames from 0 to 6 and at the end of timeout receives the acknowledgements for frame 1, 3, and 5, the next frame it will re-transmit is frame _____. (assume the protocol is go-back-n)

- 1
- 2
- 5
- 6

Show Answer 6

Question 10: 10 out of 10 in 44 attempt(s)

Total: 99/100

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Chapter 4 exercise

Started: November 25, 2019, 4:36 pm
Last change: November 29, 2019, 10:00 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

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ch4-17. Sketch the Manchester encoding for the bit stream: 0001110101.

0101011010100110 0

Show Answer The signal is a square wave with two values, high (H) and low (L). The pattern is LHLHLHHLHLHLLHHLLHHL.

Question 1: 0 out of 10 in 1 attempt(s)

ch4-2. A group of N stations share a 56-kbps pure ALOHA channel. Each station outputs a 1000-bit frame on an average of once every 100 sec, even if the previous one has not yet been sent (e.g., the stations can buffer outgoing frames). What is the maximum value of N?

A:
1030

Show Answer 1030

Question 2: 10 out of 10 in 1 attempt(s)

Briefly describe the difference between store-and-forward and cut-through switches.

A store-and-forward switch stores each incoming frame in its entirety, then examines it and forwards it. A cut-through switch starts to forward incoming frames before they have arrived completely. As soon as the destination address is in, the forwarding can begin.

Question 3: 0 out of 10 in 1 attempt(s)

Q. What is the baud rate of the standard 10-Mbps Ethernet?
A. 20 Mbaud

Show Answer 20

Question 4: 10 out of 10 in 1 attempt(s)

ch4-21. Consider building a CSMA/CD network running at 1 Gbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size in bytes?

A:
1250

Show Answer 1250

Question 5: 9 out of 10 in 2 attempt(s)

Total: 29/50

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Exercise 4 (Chap 4)

Started: October 16, 2019, 7:00 pm
Last change: October 16, 2019, 8:15 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

ch4-2. A group of N stations share a 56-kbps pure ALOHA channel. Each station outputs a 1000-bit frame on an average of once every 100 sec, even if the previous one has not yet been sent (e.g., the stations can buffer outgoing frames). What is the maximum value of N?

A: 1030

Show Answer 1030

Question 1: 10 out of 10 in 1 attempt(s)

Q. What is the baud rate of the standard 10-Mbps Ethernet?
A. 20 Mbaud

Show Answer 20

Question 2: 10 out of 10 in 1 attempt(s)

Q. Consider building a CSMA/CD network running at 10 Mbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size?
A. 100 bits

Show Answer 100

Question 3: 10 out of 10 in 1 attempt(s)

The reason for binary exponential backoff in the classical Ethernet is that_____

- this algorithm is simple
- this algorithm is fast
- this algorithm is adaptive to network load
- this algorithm is scalable to network size

Show Answer this algorithm is adaptive to network load

Question 4: 10 out of 10 in 1 attempt(s)

When binary exponential backoff is used, a random number between 0 and _____ is chosen and that number of slots is skipped

- 511
- 1023
- 2047
- 4095

Show Answer 1023

Question 5: 10 out of 10 in 1 attempt(s)

A network interface card mainly works at the _____ layer(s)

- physical and data link
- data link and network
- physical and network
- data link and transport

Show Answer physical and data link

Question 6: 10 out of 10 in 1 attempt(s)

Which is not one of the important functions provided by bridges?

- reducing the collision domain
- increasing the data rate
- increasing the length of domain
- reducing the broadcast domain

Show Answer reducing the broadcast domain

Question 7: 10 out of 10 in 1 attempt(s)

There is a 10 Mbps Ethernet switch with 10 ports each of which is connected to a single computer. Then every computer’ s data rate is _____Mbps.

- 1
- 2
- 10
- 100

Show Answer 10

Question 8: 10 out of 10 in 1 attempt(s)

_____ work at the physical layer while _____ work at the data link layer.

- ○ Hubs, routers
- ◉ Hubs, switches
- ○ Bridges, routers
- ○ Repeaters, hubs

Show Answer Hubs, switches

Question 9: 10 out of 10 in 1 attempt(s)

What kind of media used by 1000Base-F network?

- ○ Coaxial Cable
- ○ Twisted Pairs
- ◉ Fiber Optics
- ○ Power Lines

Show Answer Fiber Optics

Question 10: 10 out of 10 in 1 attempt(s)

Total: 100/100

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Exercise 5 (Chap 5)

Started: November 16, 2019, 8:47 pm
Last change: November 17, 2019, 11:06 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

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Q.Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimal notation.
194.47.21.130
Show Answer

Question 1: 8 out of 8 in 1 attempt(s)

Q.A router has the following (CIDR) entries in its routing table:

Address/mask	Next hop
135.46.56.0/22	211.90.0.1
135.46.60.0/22	159.48.0.1
192.53.40.0/23	192.188.0.1
default	220.20.0.1

For each of the following IP addresses, what does the router do if a packet with that address arrives?

A. Write correct IP address of next hop:

No.	IP	Next hop
(a)	135.46.63.10	159.48.0.1
(b)	135.46.57.14	211.90.0.1
(c)	135.46.52.2	220.20.0.1
(d)	192.53.40.7	192.188.0.1
(e)	192.53.56.7	220.20.0.1

Show Answer
Show Answer
Show Answer
Show Answer
Show Answer

Question 2: 10 (parts: 2, 2, 2, 2, 2) out of 10 in 1 attempt(s)

Q. A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of address can be used for a single host?
A. 4094
Show Answer

Question 3: 5 out of 5 in 1 attempt(s)

Q. Suppose that host A is connected to a router R1, R1 is connected to another router, R2, and R2 is connected to host B. Suppose that a TCP message that contains 900 bytes of data and 20 bytes of TCP header is passed to the IP code at host A for delivery to B. Show the Total length, MF, and Fragment offset fields of the IP header in each packet transmitted over the three links.
Assume that link A-R1 can support a maximum frame size of 1024 bytes including a 14-byte frame header, link R1-R2 can support a maximum frame size of 512 bytes, including an 8-byte frame header, and link R2-B can support a maximum frame size of 512 bytes including a 12-byte frame header.
A.Fill your answer in the blank

link	Packet#	Total length	MF	Fragment offse
A->R1	**1**	940	0	0
R1->R2	**1**	500	0	0
	2	460	0	60
R2->B	**1**	500	0	0
	2	460	0	60

Show Answer 940
Show Answer 0
Show Answer 0
Show Answer 500
Show Answer 1
Show Answer 0
Show Answer 460
Show Answer 0
Show Answer 60
Show Answer 500
Show Answer 1
Show Answer 0
Show Answer 460
Show Answer 0
Show Answer 60

Question 4: 13 (parts: 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1) out of 12 in 1 attempt(s)

Q. A large number of consecutive IP address are available starting at 198.16.0.0. Suppose that four organizations, A, B, C, and D, request 4000, 2000, 4000, and 8000 addresses, respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in w.x.y.z/s notation.
A. Fill your answer in the blank

Org#	First IP	Last IP	net/mask
A	198.16.0.0	198.16.15.255	198.16.0.0/20
B	198.16.16.0	198.23.15.255	198.16.16.0/21
C	198.16.32.0	198.16.47.255	198.16.32.0/20
D	198.16.64.0	198.16.95.255	198.16.64.0/19

Show Answer 198.16.0.0
Show Answer 198.16.15.255
Show Answer 198.16.0.0/20
Show Answer 198.16.16.0
Show Answer 198.16.23.255
Show Answer 198.16.16.0/21
Show Answer 198.16.32.0
Show Answer 198.16.47.255
Show Answer 198.16.32.0/20
Show Answer 198.16.64.0
Show Answer 198.16.95.255
Show Answer 198.16.64.0/19

Question 5: 11 (parts: 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1) out of 10 in 1 attempt(s)

How many bits does the address of IPv6 have?

- 32
- 64
- 128
- 256

Show Answer 128

Question 6: 10 out of 10 in 1 attempt(s)

Without using IPv6, which can solve the problem of running out of IP addresses?

- class full addressing
- subnetting
- class addressing
- NAT

Show Answer NAT

Question 7: 0 out of 5 in 1 attempt(s)

What is the valid host range for subnet 172.16.10.16, mask 255.255.255.240?

- 172.16.10.20 through 172.16.10.22
- 172.16.10.16 through 172.16.10.23
- 172.16.10.17 through 172.16.10.31
- 172.16.10.17 through 172.16.10.30

Show Answer 172.16.10.17 through 172.16.10.30

Question 8: 0 out of 5 in 1 attempt(s)

The checksum in the IP packet covers _____.

- just the header
- just the data
- the header and the data
- just the source and destination addresses

Show Answer just the header

Question 9: 5 out of 5 in 1 attempt(s)

A router has two IP interfaces, one IP address is 192.168.11.25/24, and the other IP address is _____ (assume use same subnet mask).

- 192.168.13.0
- 192.168.11.26
- 192.168.13.255
- 192.168.13.26

Show Answer 192.168.13.26

Question 10: 0 out of 5 in 1 attempt(s)

Suppose two hosts A and B have IP address 10.10.1.10 and 10.10.2.10 respectively. If they are in a same subnet, what is the subnet mask?

- 255.0.0.0
- 255.255.0.0
- 255.255.255.0
- 255.255.255.255

Show Answer 255.255.0.0

Question 11: 5 out of 5 in 1 attempt(s)

Which IP address is a loopback address?

- 1.0.0.1
- 192.168.0.1
- 127.0.0.1
- 172.0.0.1

Show Answer 127.0.0.1

Question 12: 5 out of 5 in 1 attempt(s)

Which is not the private address that will not appear in Internet datagram?

- 10.3.18.82
- 192.168.8.3
- 10.214.0.1
- 172.33.8.8

Show Answer 172.33.8.8

Question 13: 5 out of 5 in 1 attempt(s)

Which protocol is used in command “ping 10.214.8.9” ?

- ARP
- (•) ICMP
- RARP
- ECHO

Show Answer ICMP

Question 14: 5 out of 5 in 1 attempt(s)

Which is not a legal IPV6 address?

- 8300::1382:4567:89AB:CDEF
- (•) 1382:4567:89AB:CDEF
- ::211.31.20.46
- 2A43:0000:0000:0000:0123:4567:89AB:CDEF

Show Answer 1382:4567:89AB:CDEF

Question 15: 5 out of 5 in 1 attempt(s)

Total: 87/100

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Exercise 6 (Chap 6)

Started: November 28, 2019, 1:04 pm
Last change: November 28, 2019, 10:52 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. 576 bytes

Show Answer 576

Question 1: 10 out of 10 in 2 attempt(s)

Q. Consider the effect of using slow start on a line with a 10-msec round-trip time and no congestion. The receive window is 24 KB and the maximum segment size is 2 KB. How long does it take before the first full window can be sent?
A. 40 msec
Show Answer 40

Question 2: 10 out of 10 in 2 attempt(s)

Q. Suppose that the TCP congestion window is set to 18 KB and a timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB.
A. 9 KB
Show Answer 9

Question 3: 10 out of 10 in 17 attempt(s)

Q. A TCP machine is sending full windows of 65,535 bytes over a 1-Gbps channel that has a 10-msec one-way delay. What is the maximum throughput achievable? What is the line efficiency? (give your answer as xx.x)
maximum througput: 3.3 MB/s
line efficiency: 2.6 %
Show Answer 3.3
Show Answer 2.6

Question 4: 10 (parts: 5, 5) out of 10 in 2 attempt(s)

Q. In a network that has a maximum TPDU data size of 128 bytes, a maximum TPDU lifetime of 30 sec, and an 8-bit sequence number, what is the maximum data rate per connection?

A. 8.7 kbps

Show Answer 8.704

Question 5: 10 out of 10 in 3 attempt(s)

What is used at the transport layer to stop a receiving host's buffer from overflowing?

- Segmentation
- Packets
- Acknowledgments
- Flow control

Show Answer Flow control

Question 6: 10 out of 10 in 2 attempt(s)

Which type of service is provided by TCP?

- request-reply
- acknowledged datagram
- reliable message stream
- reliable byte stream

Show Answer reliable byte stream

Question 7: 10 out of 10 in 3 attempt(s)

TCP uses _____ handshake scheme to establish connections.

- one-way
- two-way
- three-way
- four-way

Show Answer three-way

Question 8: 10 out of 10 in 2 attempt(s)

Which socket primitive is used to block the caller until a connection attempt arrives?

- bind
- listen
- connect
- accept

Show Answer accept

Question 9: 10 out of 10 in 7 attempt(s)

If the window size field of the acknowledgement TCP segment is 90 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?

50 KB

Show Answer 50

Question 10: 10 out of 10 in 2 attempt(s)

Total: 100/100

Return to GradeBook

Chapter 7 exercise

No time limit
Show Instructions

Enter intro/instructions

ch7-13. A binary file is 3072 bytes long. How long will it be if encoded using base64 encoding, with a CR+LF pair inserted after every 80 bytes sent and at the end?

A:
4200

Points available on this attempt: 8 of original 10
Unlimited attempts.

Grade Book Detail

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Quiz 1

Started: November 12, 2019, 9:55 am
Last change: November 12, 2019, 10:01 am

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Which of the following description about OSI layers is incorrect?

- ○ The physical layer is concerned with transmitting raw bits over a communication channel
- ◉ The data link layer is a true end-to-end layer, all the way from the source to the destination
- ○ The network layer controls the operation of the subnet and determines how packets are routed from source to destination
- ○ The application layer contains a variety of protocols that are commonly needed by users

Show Answer The data link layer is a true end-to-end layer, all the way from the source to the destination

Question 1: 10 out of 10 in 1 attempt(s)

Connectionless Services is also called

- ○ virtual circuit service
- ○ acknowledged datagram service
- ○ client-server service
- ◉ datagram service

Show Answer datagram service

Question 2: 10 out of 10 in 1 attempt(s)

Q. Television channels are 9 MHz wide. How many bits/sec can be sent if 2-level digital signals are used? Assume a noiseless channel.
A. 18 _____ Mbps

Show Answer 18

Question 3: 10 out of 10 in 1 attempt(s)

A noiseless 2-k Hz channel is sampled every 1 msec. What is the maximum data rate?

- ○ 1000 bps
- ○ 2000 bps
- ○ 4000 bps
- ◉ Can be infinite

Show Answer Can be infinite

Question 4: 10 out of 10 in 1 attempt(s)

A CRC generator polynomial is G(X)= X^16+X^15+X^2+l. How many bits will the checksum be?

- ○ 14
- ○ 15
- ◉ 16
- ○ 17

Show Answer 16

Question 5: 10 out of 10 in 1 attempt(s)

Total: 50/50

Return to GradeBook

Grade Book Detail

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Quiz 2

Started: November 12, 2019, 10:10 am
Last change: November 12, 2019, 10:13 am

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

_____ work at the physical layer while _____ work at the data link layer.

- Hubs, routers
- (•) Hubs, switches
- Bridges, routers
- Repeaters, hubs

Show Answer

Question 1: 10 out of 10 in 1 attempt(s)

A network interface card mainly works at the _____ layer(s)

- (•) physical and data link
- data link and network
- physical and network
- data link and transport

Show Answer

Question 2: 10 out of 10 in 1 attempt(s)

Q. Consider building a CSMA/CD network running at 10 Mbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size?
A. 100 _____ bits

Show Answer

Question 3: 10 out of 10 in 1 attempt(s)

Which is not the CSMA / CA rule of 802.11?

- If station X received RTS of station A, X must remain silent for a short time
- If station X received RTS, but did not receive CTS, then X may not transmit its data.
- If station X has not received RTS, but received CTS, then X may not transmit its data
- If station X has received both RTS and CTS, then X may not transmit its data

Show Answer

Question 4: 10 out of 10 in 1 attempt(s)

After the sender first sends frames from 0 to 6 and at the end of timeout receives the acknowledgements for frame 1, 3, and 5, the next frame it will re-transmit is frame _____. (assume the protocol is go-back-n)

- 1
- 2
- 5
- 6

Show Answer

Question 5: 10 out of 10 in 1 attempt(s)

Total: 50/50

Return to GradeBook

Grade Book Detail

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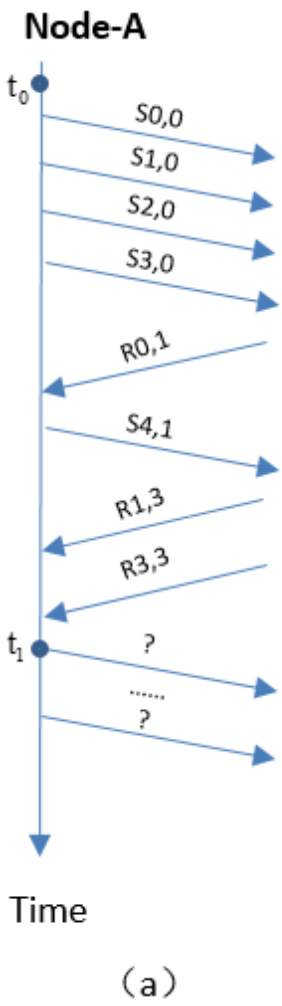
Quiz 3

Started: November 19, 2019, 10:04 am
Last change: January 1, 1970, 8:00 am

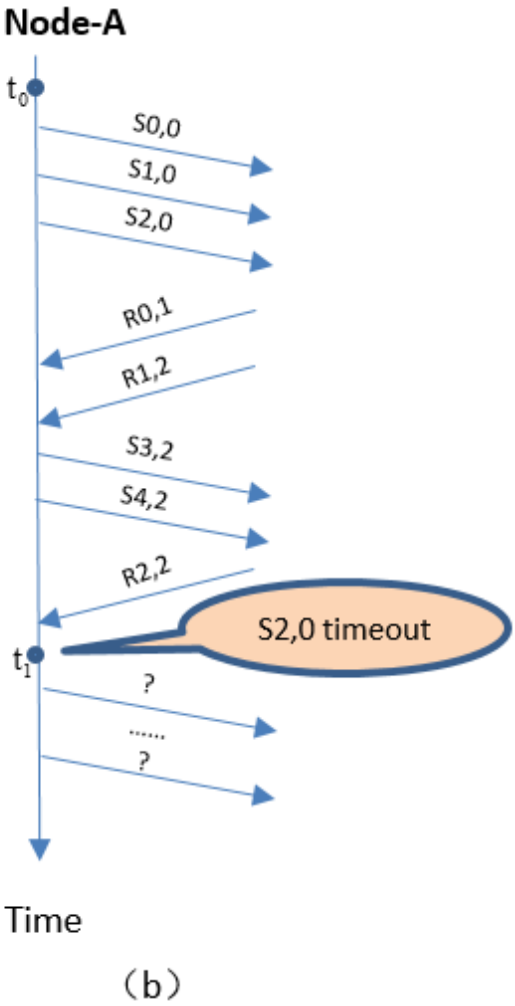
Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Both Node-A and Node-B use the Go-Back-N protocol for continuous two-way data transmission, both parties use piggyback acknowledgement, and the frame length is 2000 bits. Sx,y and Rx,y respectively denote the data frames sent by Node-A and Node-B, where x is the sequence number for the outgoing frame, y is the acknowledgment number which is the number for the next incoming frame to receive. The field length of sequence numbers and acknowledgment numbers of data frames is 4 bits. The data transmission rate of the channel is 100 Mbps and propagation time is 0.48 ms. The following figures show two scenarios in which the Node-A sends and receives data frames, at the initial time t_0 both sequence number and acknowledgment sequence number of Node-A is 0, and at t_1 Node-A has enough data to be transmitted.



(a)



(b)

1. For Figure (a), from t_0 to t_1, Node-A can confirm that
   how many frames Node-B has received correctly? _____
   Which ones are the frames received correctly? (Denote them as Sx,y)

   x **y**

First Frame: S _____ , _____

Last Frame: S _____ , _____

2. For Figure (a), from t_1, if no timeout occurred and no more data frame is received from Node-B,
   how many data frames can Node-A send? _____
   What are the first frame and the last frame (Denote them as Sx, y)?

   x **y**

   First Frame: S _____ , _____

   Last Frame: S _____ , _____

3. For Figure (b), from t_0 to t_1, Node-A can confirm that
   how many frames Node-B has received correctly? _____
   What is the last frame? (Denote them as Sx,y)

   x **y**

   Last Frame: S _____ , _____

4. For Figure (b), from t_1, if no new timeout occurred and no more data frame is received from Node-B,
   how many data frames does Node-A need to retransmit? _____
   The retransmission frames will be (Denote them as Sx, y):

   x **y**

   First Frame: S _____ , _____

   Last Frame: S _____ , _____

5. What is the sending time of a frame? _____ms
   What is the maximum channel utilization that Node-A can achieve ? _____% (rounding integer)
   (Tip: Please consider the transmission time of acknowledgment frame)

Show Answer 3
Show Answer 0
Show Answer 0
Show Answer 2
Show Answer 0
Show Answer 13
Show Answer 5
Show Answer 2
Show Answer 1
Show Answer 2
Show Answer 2
Show Answer 1
Show Answer 0
Show Answer 3
Show Answer 2
Show Answer 3
Show Answer 4
Show Answer 3

Show Answer 2000/(100*10^6)*1000 = 0.02

Show Answer 15*0.02/(0.96 + 2*0.02)*100 = 30 or 30

Question 1: NA out of 100 in 0 attempt(s)

Total: 0/100

Return to GradeBook

Grade Book Detail

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Quiz 4

Started: December 18, 2019, 12:40 pm
Last change: January 4, 2020, 1:30 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Part 1/6.

1. Which layer 2 switch will be elected to the root bridge?

- ○ Switch A
- ◉ Switch B
- ○ Switch C
- ○ Switch D

2. Which type is the interface Fa0/2 of switch C?

- ○ Non-Designated Port
- ○ Designated Port
- ◉ Root Port
- ○ None of above

3. Which port is in blocked state? Port

- ○ Fa0/3 in switch C
- ◉ Fa0/2 in switch A
- ○ Fa0/2 in switch C
- ○ Fa0/1 in switch A

Show Answer
Show Answer
Show Answer

Question 1: 6 (parts: 2, 2, 2) out of 6 in 1 attempt(s)

Part 2/6. Write the commands to assign Fa0/0 in switch C to VLAN 2:

1. SwitchC(Config)# interface Fa0/0
2. SwitchC(Config-if)# switchport mode access (set mode)
3. SwitchC(Config-if)# switchport access vlan 2 (assign vlan)

Show Answer
Show Answer
Show Answer

Question 2: 6 (parts: 2, 2, 2) out of 6 in 1 attempt(s)

Part 3/6. Write the commands to create 2 sub interfaces in router A, and assign the correct VLAN and IP address to the sub interfaces. Select IP addresses from following: 10.1.0.1/16, 10.0.0.1/16:

1. RouterA(Config)# interface e0/0.1 (#1 sub interface)
2. RouterA(Config-subif)# ip address 10.0.0.1 255.255.0.0 (set address)
3. RouterA(Config-subif)# encapsulation dot1q 1 (set vlan 1)
4. RouterA(Config)# interface e0/0.2 (#2 sub interface)
5. RouterA(Config-subif)# ip address 10.1.0.1 255.255.0.0 (set address)
6. RouterA(Config-subif)# encapsulation dot1q 2 (set vlan 2)

Show Answer
Show Answer
Show Answer
Show Answer
Show Answer
Show Answer

Question 3: 12 (parts: 2, 2, 2, 2, 2, 2) out of 12 in 1 attempt(s)

Part 4/6.

1. Write the commands to set the correct mode for Fa0/0 in switch A:
   Swtich A(Config)# interface fa0/0
   Swtich A(Config-if)# switchport mode trunk
2. Which IP address should be assigned as the default router's address of PC 1?
   10.0.0.1

Show Answer
Show Answer
Show Answer

Question 4: 6 (parts: 2, 2, 2) out of 6 in 1 attempt(s)

Part 5/6. Assume Fa0/0 in switch D is assigned to VLAN 3. Write commands to configure the VLAN 3 interface. Select IP address from following: 10.0.0.1 10.1.0.1 10.2.0.1 10.3.0.1

1. SwitchD(config)# interface vlan 3
2. SwitchD(config-if)# ip address 10.2.0.1 255.255.0.0 (set address)
3. SwitchD(config-if)# no shutdown (enable interface)

Show Answer
Show Answer
Show Answer

Question 5: 6 (parts: 2, 2, 2) out of 6 in 1 attempt(s)

Part 6/6. Write commands to enable layer 3 switching in Switch D:

1. SwtichD(config)# ip routing
2. Assume Fa0/2 in switch D is set to VLAN 3, which IP address can be assigned to PC 7? (host address must less than 10) 10.2.0.3

Show Answer
Show Answer

Question 6: 4 (parts: 2, 2) out of 4 in 1 attempt(s)

Total: 40/40

Return to GradeBook

Grade Book Detail

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Quiz 5

Started: December 18, 2019, 12:42 pm
Last change: December 18, 2019, 4:57 pm

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

The client host A, IP address 192.168.0.8, connects to the Internet via fast Ethernet interface. The server B has IP address 211.68.71.80. Following packets are captured at host A by sequence:

No.	The First 40 bytes of IP packet (HEX)				
1	45 00 00 32 07 35 13 88	01 9b 40 00 84 6b 41 c5	80 06 1d e8 00 00 00 00	c0 a8 00 08 70 02 43 80	d3 44 47 50 5d b0 00 00
2	45 00 00 32 13 88 07 35	00 00 40 00 00 00 00 02	29 06 6e 83 84 6b 41 c6	d3 44 47 50 70 12 16 d0	c0 a8 00 08 37 e1 00 00
3	45 00 00 28 07 35 13 88	01 9c 40 00 84 6b 41 c6	80 06 1d ef 00 00 00 03	c0 a8 00 08 50 10 43 80	d3 44 47 50 2b 32 00 00
4	45 00 00 38 07 35 13 88	01 9d 40 00 84 6b 41 c6	80 06 1d de 00 00 00 03	c0 a8 00 08 50 18 43 80	d3 44 47 50 c6 55 00 00
5	45 00 00 28 13 88 07 35	68 11 40 00 00 00 00 03	29 06 06 7a 84 6b 41 e6	d3 44 47 50 50 10 16 d0	c0 a8 00 08 57 d2 00 00

1. Which packets are sent by the server B?
   ◉ No.5 and No.2 ○ No.4 and No.5 ○ No.2 and No.3 ○ No.1 and No.3
2. The total length of packet No.1 is: 50
3. Which packets need fill out the frame to the minimum size at the fast Ethernet MAC layer?
   ◉ No.3 and No.5 ○ No.1 and No.2 ○ No.1 and No.3 ○ No.4 and No.5
4. The TTL of packet No.2 is: 41
5. At the same time, we have captured packets at server B, below is one of those packets sent by server B:

Sent by	The First 40 bytes of IP packet (HEX)				
Server B	45 00 00 28 01 84 a1 08	68 11 40 00 00 00 00 02	56 06 ec ad 84 6b 41 e6	d3 44 47 50 50 10 16 d0	ca 76 01 06 b7 d6 00 00

Which packet captured at host A is the same packet as this one (has the same identification)?

○ No.1 ○ No.2 ○ No.3 ○ No.4 ◉ No.5

6. How many routers passed before the packet above (sent by server B) arrived to the host A? 45
7. Which packet is NOT used for TCP connection establishment?
   ○ No.1 ○ No.2 ○ No.3 ◉ No.4
8. The sequence number of packet No.2 is: 2
9. According to the packet No.5, how many bytes have received by the server B? 32 bytes
10. According these packets, what is the port number listened by host A: 1845

Show Answer	No.5 and No.2
Show Answer	50
Show Answer	No.3 and No.5
Show Answer	41
Show Answer	No.5
Show Answer	45
Show Answer	No.4
Show Answer	2
Show Answer	32
Show Answer	1845

Question 1: 100 (parts: 10, 10, 10, 10, 10, 10, 10, 10, 10, 10) out of 100 in 1 attempt(s)

Total: 100/100

Return to GradeBook

Grade Book Detail

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Quiz 6

Started: December 10, 2019, 9:52 am
Last change: January 4, 2020, 3:46 pm

Time limit exceeded by 36339 minutes, 3 seconds.

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Which socket primitive is used to block the caller until a connection attempt arrives?

- bind
- listen
- connect
- accept

Show Answer

Question 1: 10 out of 10 in 1 attempt(s)

What is used at the transport layer to stop a receiving host's buffer from overflowing?

- Segmentation
- Packets
- Acknowledgments
- Flow control

Show Answer

Question 2: 10 out of 10 in 1 attempt(s)

Q. If the window size field of the acknowledgement TCP segment is 60 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
A. 50 kB

Show Answer

Question 3: 10 out of 10 in 1 attempt(s)

Q. Consider the effect of using slow start on a line with a 10 ms round-trip time and no congestion. The receive window is 12 KB and the maximum segment size is 1 KB. How long does it take before the first full window can be sent?
A. 30 ms
Show Answer 40

Question 4: 0 out of 10 in 1 attempt(s)

Q. In TCP Tahoe suppose that the TCP congestion window is set to 32 KB and a timeout occurs. How big will the window be if the next 8 transmission bursts are all successful? Assume that the maximum segment size is 2 KB.
A. 288 KB
Show Answer 26

Question 5: 0 out of 10 in 1 attempt(s)

Total: 30/50

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Grade Book Detail

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Quiz 7

Started: December 17, 2019, 9:50 am
Last change: December 17, 2019, 10:10 am

Time limit exceeded by 25 seconds.

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Part 1/4. Write commands to enable OSPF for all interfaces in router D (use process id 1)

1. RouterD(Config)# router ospf 46
   Enable routing on networks:
2. RouterD(Config-router)# network 20.3.0.0 0.0.255.255 area 1 (for E1/1)
3. RouterD(Config-router)# network 20.1.0.0 0.0.255.255 area 0 (for Gi0/0)
4. RouterD(Config-router)# network 20.4.0.0 0.0.255.255 area 0 (for E1/0)

Show Answer router ospf 1
Show Answer network 20.3.0.0 0.0.255.255 area 1
Show Answer network 20.1.0.0 0.0.255.255 area 0
Show Answer network 20.4.0.0 0.0.255.255 area 0

Question 1: 15 (parts: 0, 5, 5, 5) out of 20 in 1 attempt(s)

Part 2/4. What's the RID of router G? 7

Show Answer 11.7.0.1

Question 2: 0 out of 5 in 1 attempt(s)

Part 3/4. In order to exchange link state between area 3 and area 0, which routers should be configured to set up a virtual link? Write commands to setup a virtual link in the two routers (use process id 1):

for the router in area 0:

◉ **Router E** ○ **Router G** ○ **Router H** ○ **Router K**

1. **Router(Config)#** router ospf 46
2. **Router(Config-router)#** network 20.8.0.0 area 3

for the router in area 3:

○ **Router E** ○ **Router G** ◉ **Router H** ○ **Router K**

3. **Router(Config)#** router ospf 46
4. **Router(Config-router)#** network 20.6.0.0 area 0

Show Answer **Router E**
Show Answer **router ospf 1**
Show Answer **area 2 virtual-link 11.8.0.1**
Show Answer **Router H**
Show Answer **router ospf 1**
Show Answer **area 2 virtual-link 11.5.0.1**

Question 3: 10 (parts: 5, 0, 0, 5, 0, 0) out of 30 in 1 attempt(s)

Part 4/4. Assume all routers run OSPF correctly, and all parameters use default value.

1. **What is the next hop for 10.1.0.0/16 in router C? Write IP address:**
   1
2. **What is the minimum cost from router F to 10.2.0.0/16?**
   3
3. **What is the next hop for 20.6.0.0/16 in router D? Write IP address:**
   4

Show Answer **20.2.0.1**
Show Answer **18**
Show Answer **20.1.0.1**

Question 4: 0 (parts: 0, 0, 0) out of 15 in 1 attempt(s)

Total: 25/70

Return to GradeBook

Grade Book Detail

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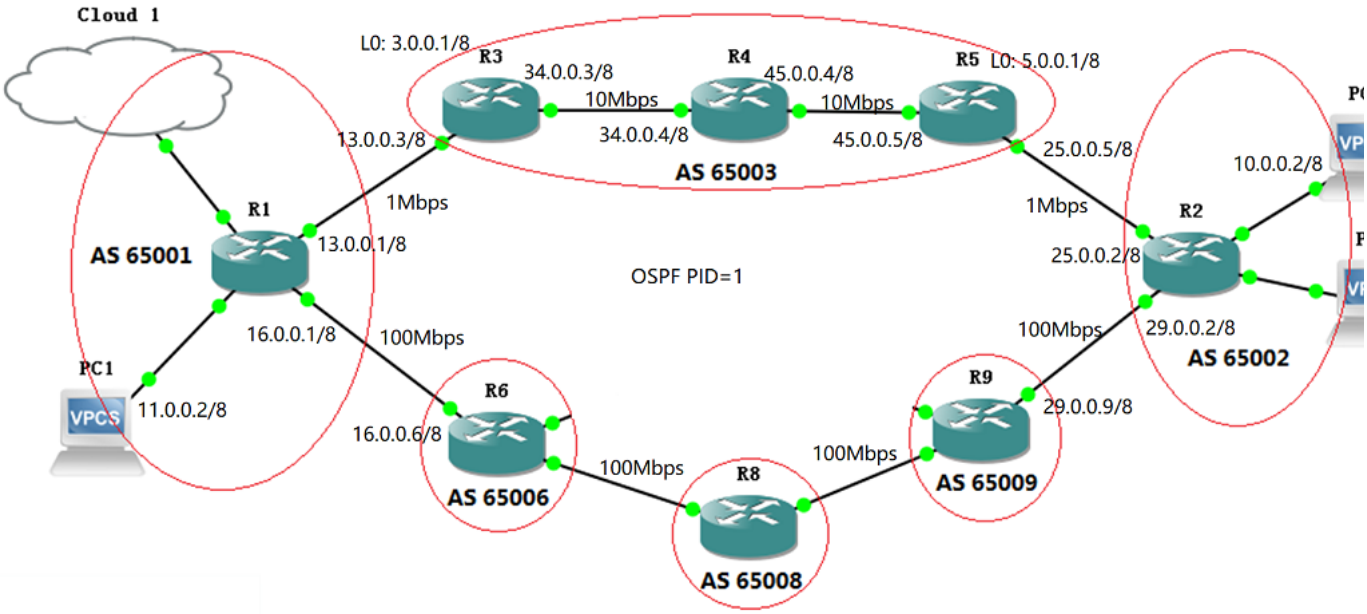
Quiz 8

Started: December 24, 2019, 9:55 am
Last change: December 24, 2019, 10:14 am

Showing Scored Attempts | Show Last Attempts | Show Review Attempts

Hide Perfect Score Questions | Hide Not Answered Questions

Refer the network topology. All routers use BGP as inter-AS routing protocol, use OSPF as inner-AS routing protocol (use process id 1).



Part 1/5. Write commands to enable BGP for all physical interfaces in router R3

1. R3(Config)# router bgp 65003

   Enable routing on networks:

2. R3(Config-router)# network 13.0.0.0 mask 255.255.0.0 (for R1-R3 link)
3. R3(Config-router)# network 34.0.0.0 mask 255.255.0.0 (for R3-R4 link)

   set R1 as a neighbor:

4. R3(Config-router)# neighbor 13.0.0.1 remote-as 65001

   set R5 as a neighbor (using loopback address):

5. R3(Config-router)# neighbor 5.0.0.1 remote-as 65003

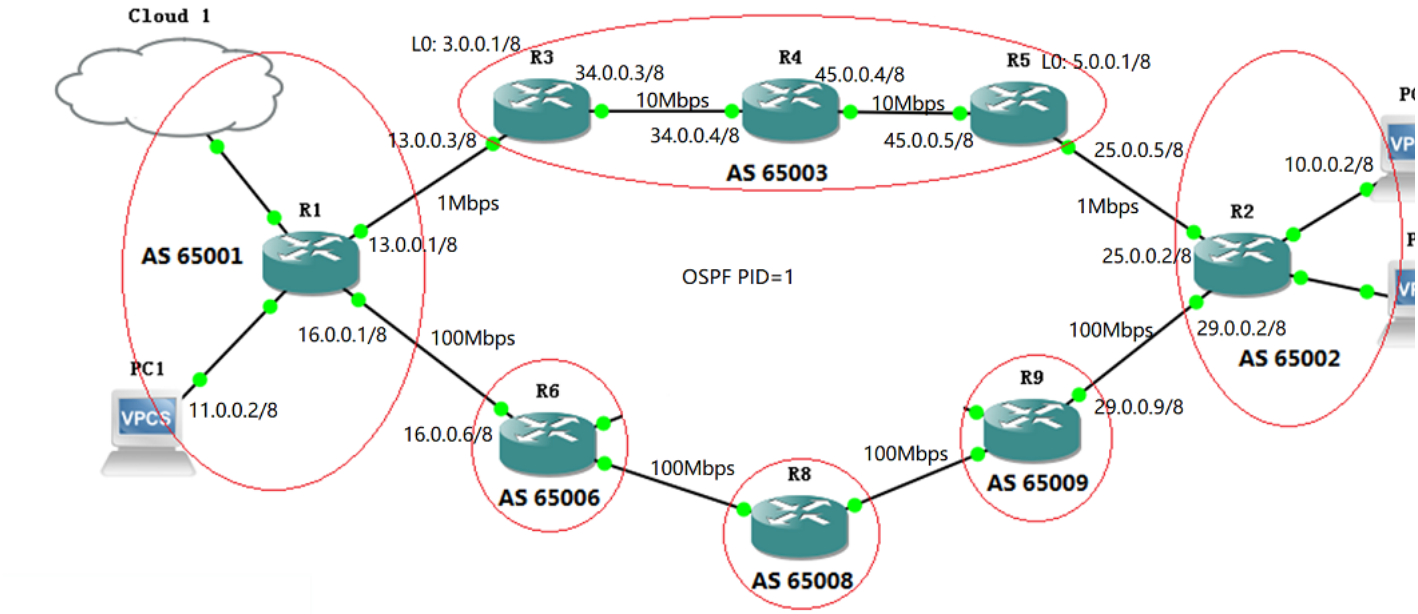
   use loopback as update source:

6. R3(Config-router)# neighbor 5.0.0.1 update-source loopback 0

Show Answer router bgp 65003
Show Answer network 13.0.0.0 mask 255.0.0.0
Show Answer network 34.0.0.0 mask 255.0.0.0
Show Answer neighbor 13.0.0.1 remote-as 65001
Show Answer neighbor 5.0.0.1 remote-as 65003
Show Answer neighbor 5.0.0.1 update-source loopback 0

Question 1: 16 (parts: 4, 0, 0, 4, 4, 4) out of 24 in 1 attempt(s)

Refer the network topology. All routers use BGP as inter-AS routing protocol, use OSPF as inner-AS routing protocol (use process id 1).



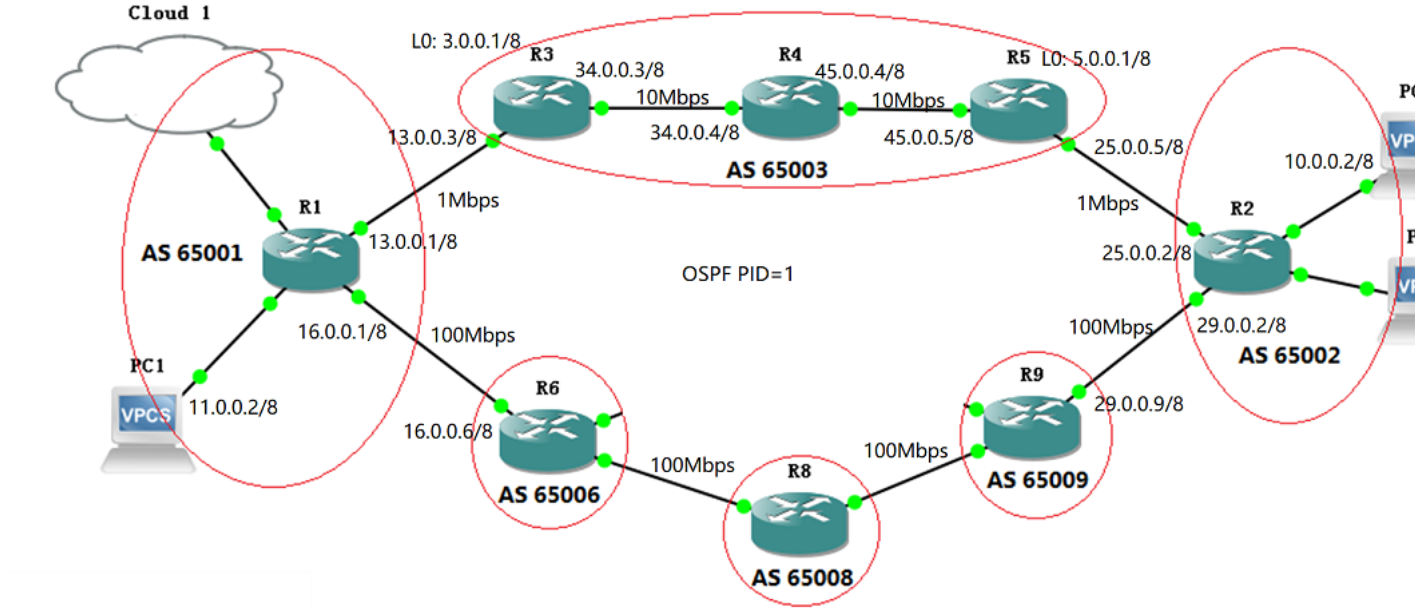
Part 2/5. Write commands to set R3 as the neighbor of R5 (using loopback address)

1. R5(Config)# router bgp 65003
2. R5(Config-router)# neighbor 5.0.0.1 remote-as 65003 (set neightbor)
3. R5(Config-router)# neighbor 5.0.0.1 update-source loopback 0 (set update source)

Show Answer router bgp 65003
Show Answer neighbor 3.0.0.1 remote-as 65003
Show Answer neighbor 3.0.0.1 update-source loopback 0 or neighbor 3.0.0.1 update-source L0

Question 2: 4 (parts: 4, 0, 0) out of 12 in 1 attempt(s)

Refer the network topology. All routers use BGP as inter-AS routing protocol, use OSPF as inner-AS routing protocol (use process id 1).



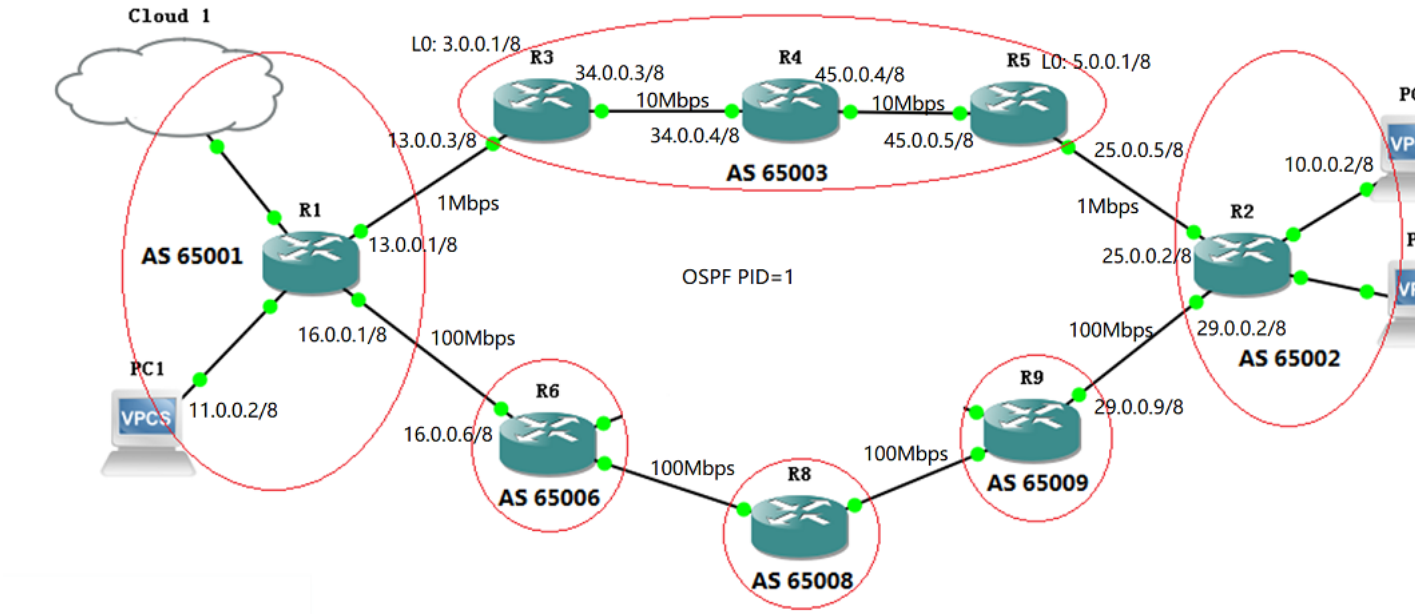
Part 3/5. To let routers in AS 65003 has route for outside networks, restribution should be configured in R3:

1. R3(Config)# router bgp 65003
2. R3(Config-router)# neighbor 13.0.0.1 remote-as 65001

Show Answer router ospf 1
Show Answer redistribute bgp 65003 subnets

Question 3: 0 (parts: 0, 0) out of 8 in 1 attempt(s)

Refer the network topology. All routers use BGP as inter-AS routing protocol, use OSPF as inner-AS routing protocol (use process id 1).



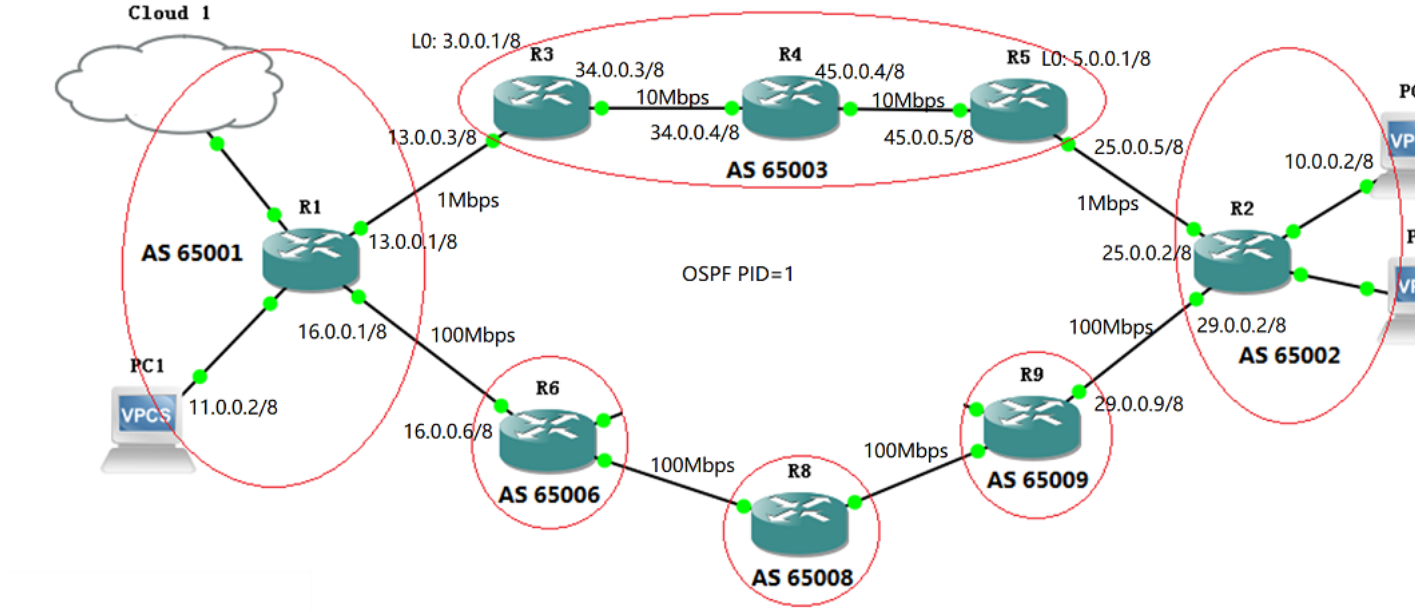
Part 4/5. To let router R2 has route for all inner networks in AS 65003, restribution should be configured in R5:

1. R5(Config)# router ospf 46
2. R5(Config-router)# redistribute bgp 65003 subnets

Show Answer router bgp 65003
Show Answer redistribute ospf 1

Question 4: 0 (parts: 0, 0) out of 8 in 1 attempt(s)

Refer the network topology. All routers use BGP as inter-AS routing protocol, use OSPF as inner-AS routing protocol (use process id 1).



Part 5/5. Assume all routers run BGP correctly, and all parameters use default value.

1. What is the next hop for 10.0.0.0/8 in router R1? Write IP address: 13.0.0.1/8
2. What is the next hop for 11.0.0.0/8 in router R2? Write IP address: 25.0.0.2/8

Show Answer 13.0.0.3
Show Answer 25.0.0.5

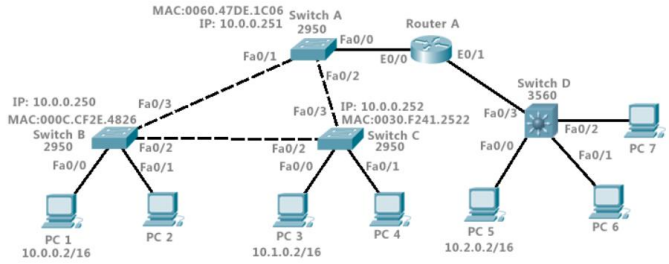
Question 5: 0 (parts: 0, 0) out of 8 in 1 attempt(s)

Total: 20/60

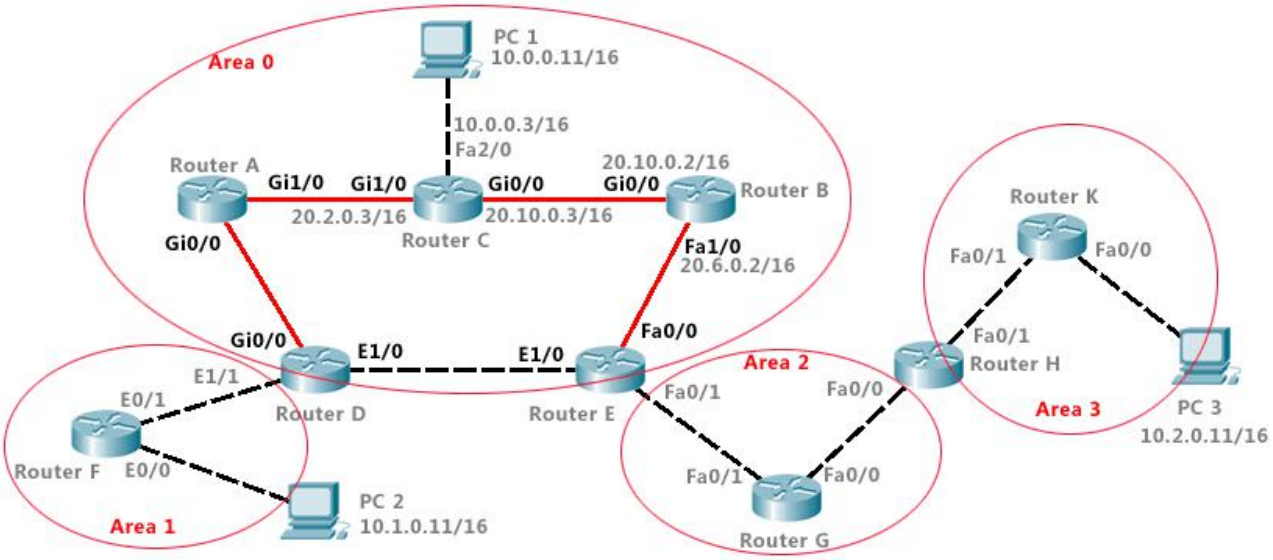
Return to GradeBook

QUIZ4 图：

Refer the network topology. All switches except switch D are layer 2 switch, and devices are in default states. Answer following questions (each question is based the previous step)



QUIZ7 图：



running configure of router A	running configure of router E	running configure of router F
interface Loopback 1 ip address 11.1.0.1 255.255.0.0 interface GigabitEthernet 0/0 ip address 20.1.0.1 255.255.0.0 interface GigabitEthernet 1/0 ip address 20.2.0.1 255.255.0.0	interface Loopback 1 ip address 11.5.0.1 255.255.0.0 interface Ethernet 1/0 ip address 20.4.0.5 255.255.0.0 interface FastEthernet 0/0 ip address 20.5.0.5 255.255.0.0 interface FastEthernet 0/1 ip address 20.6.0.5 255.255.0.0	interface Loopback 1 ip address 11.6.0.1 255.255.0.0 interface Ethernet 0/0 ip address 10.1.0.6 255.255.0.0 interface Ethernet 0/1 ip address 20.3.0.6 255.255.0.0
running configure of router G	**running configure of router H**	**running configure of router K**
interface Loopback 1 ip address 11.7.0.1 255.255.0.0 interface FastEthernet 0/0 ip address 20.7.0.7 255.255.0.0 interface FastEthernet 0/1 ip address 20.6.0.7 255.255.0.0	interface Loopback 1 ip address 11.8.0.1 255.255.0.0 interface FastEthernet 0/0 ip address 20.7.0.8 255.255.0.0 interface FastEthernet 0/1 ip address 20.8.0.8 255.255.0.0	interface Loopback 1 ip address 11.9.0.1 255.255.0.0 interface FastEthernet 0/0 ip address 10.2.0.9 255.255.0.0 interface FastEthernet 0/1 ip address 20.8.0.9 255.255.0.0

1、一个 UDP 用户数据报的数据字段为 8192 字节。在链路层要使用以太网来传送。试问应当划分为几个 IP 数据报片？说明每一个 IP 数据报片的数据字段长度和片偏移字段的值。

数据报总长为 8192+8(UDP首部)=8200字节

IP层最大传输单元MTU=1500，IP首部20⇒数据向1480字节

8200/1480 =5…800

第1个偏移量为0，长度为1480

第2个偏移量1480/8=185，长度1480

第3个偏移量1480×2/8=370，长度1480

第4个偏移量1480×3/8=555，长度1480

第5个偏移量1480×4/8=740，长度1480

第6个偏移量1480×5/8=925，长度800

2、一个 UDP 用户数据报的首部的十六进制表示为：06 32 00 45 00 1C E2 17。试求源端口、目的端口、用户数据报的总长度、数据部分长度。这个

3、用户数据报是从客户发送给服务器还是从服务器发送给客户？使用 UDP 的这个服务器程序是什么？

3. 从客户发给服务器

服务器程序是TFTP.

2. 源端口为0632，即1586

目的端口为0045，即69

总长度为001C，即28

数据部分长度为 28-8=20

4、主机 A 向主机 B 连续发送了两个 TCP 报文段，其序号分别是 70 和 100。试问：

（1）第一个报文段携带了多少字节的数据？

（2）主机 B 收到第一个报文段后发回的确认中的确认号应当是多少？

（3）如果 B 收到第二报文段后发回的确认中的确认号是 180，试问 A 发送的第二个报文段中的数据有多少字节？

（4）如果 A 发送的第一个报文段丢失了，但第二个报文段到达了 B。B 在第二个报文段到达后向 A 发送确认。试问这个确认号应为多少？

(1) 数据为70-99，~~100-70=30~~ 共30字节数据.

(2) 100

(3) 数据为 180-100=80字节.

(4) 由于未收到第1个报文段，确认号为70

5、主机 A 向主机 B 发送 TCP 报文段，首部中的源端口是 m 而目的端口是 n。当 B 向 A 发送回信时，其 TCP 报文段的首部中的源端口和目的端口分别是什么？

源端口为 n，目的端口为 m

计算机网络 Quiz 整理

Quiz 1

Which of the following description about OSI layers is incorrect?

- ○ The physical layer is concerned with transmitting raw bits over a communication channel
- ◉ The data link layer is a true end-to-end layer, all the way from the source to the destination
- ○ The network layer controls the operation of the subnet and determines how packets are routed from source to destination
- ○ The application layer contains a variety of protocols that are commonly needed by users

Answer:

Data link layer 不是 end-to-end layer，只考虑下一个端口。

Connectionless Services is also called

- ○ virtual circuit service
- ○ acknowledged datagram service
- ○ client-server service
- ◉ datagram service

Answer:

Datagram service 就是数据包服务，数据包是无连接的，因此选择第四个。Acknowledged datagram service 带确认的数据包服务也算对，但是相对来说选择更加正确的。

A noiseless 2-k Hz channel is sampled every 1 msec. What is the maximum data rate?

- ○ 1000 bps
- ○ 2000 bps
- ○ 4000 bps
- ◉ Can be infinite

Answer:

f=1/1msec=1000Hz 并没有超出 2KHz。通过 Nyquist 定理，在带宽确定的情况下，只要每次采样的信号 bits 数越多，其速率就越大，因此可以趋于无限大。

A CRC generator polynomial is G(X)= X^16+X^15+X^2+1. How many bits will the checksum be?

- ○ 14
- ○ 15
- ○ 16
- ◉ 17

Show Answer 16

Answer:

校验码的位数=生成多项式 G(X)的最高次幂。

Quiz 2

1、 After the sender first sends frames from 0 to 6 and at the end of timeout receives the acknowledgements for frame 1, 3, and 5, the next frame it will re-transmit is frame _____. (assume the protocol is go-back-n)

a). 1

b). 2

c). 5

d). 6

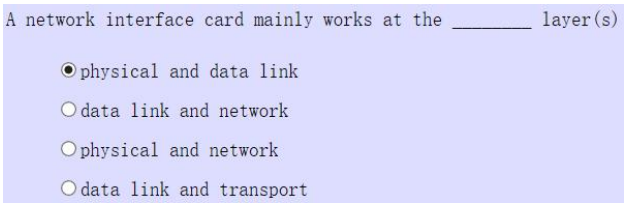
Answer:

收到确认帧 1、3、5 表示第 5 帧包括之前的帧全部已收到，因此下一个将要发送的帧是第 6 帧。

2、 Consider building a CSMA/CD network running at 1000 Mbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size?

Answer:

10000bits。最小帧长度=一个来回的路程，即一端到最远的地方再返回来的路程。这里一个来回的路程是 1*2=2km。然后计算最小帧一个来回需要的时间，2km/200, 000km/s=0.00001s。最后再乘以传输速率 0.00001s*1000Mbps = 0.01Mb = $0.01*10^6$ = 10000bits。



Answer:

网卡是用来允许计算机在网络上进行通讯的计算机硬件。由于数据链路层有 MAC 物理地址协议，而网卡拥有 MAC 地址，因此网卡属于数据链路层。同时网卡是在底层工作的，因此也属于物理层。

Quiz 3

1、Which is the IP address whose hexadecimal representation is 12230932?

a. 12.23.09.32　b. 18.35.09.50　c. 50.09.35.18　d. 32.09.23.12

Answer:

B. 先将十六进制数转换成二进制形式，然后在八位八位分组，每组转换成十进制即可。

2、Which is a link state routing protocol?

a. RIP　b. IGRP　c. BGP　d. OSPF

Answer:

D. OSPF 是链路状态的路由协议，属于内部网关协议，用于同一个自治系统内部。该协议将链路状态组播传送给在区域内的所有路由器。而距离矢量路由协

议则是将部分或全部的路由表传递给与其相邻的路由器。

3、What is the valid host range for subnet 212.10.10.32, mask 255.255.255.224?

a). 212.10.10.0 through 212.10.10.255

b). 212.10.10.32 through 212.10.10.63

c). 212.10.10.33 through 212.10.10.62

d). 212.10.10.1 through 212.10.10.254

Answer:

C. 224->1110, 0000，32->0010, 0000，主机地址有 5 位可供 32 个地址。再减去全 0 的网络地址和全 1 的广播地址，剩下 30 个地址。主机地址应从 000001 开始，即 33。

4、A router has the following (CIDR) entries in its routing table:

Address	Mask	Next Hop	
135.46.64.0	255.255.192.0	192.168.0.1	64->0100, 0000/18
135.46.80.0	255.255.240.0	172.16.0.1	80->0101, 0000/20
135.46.128.0	255.255.224.0	10.0.0.1	128->1000, 0000/19
0.0.0.0	0.0.0.0	123.0.0.1	

Which is the next hop if a packet with the destination address 135.46.95.2 arrives?

a. 192.168.0.1 b. 10.0.0.1 c. 172.16.0.1 d. 123.0.0.1

How about the destination address is 135.46.161.2?

a. 192.168.0.1 b. 10.0.0.1 c. 172.16.0.1 d. 123.0.0.1

Answer:

解题思路：首先将 IP 地址的网络地址写成二进制形式，并列出掩码长度。然后转换题目的 IP 地址，再与表中的地址进行比对，选择匹配中最长的。

由于表中 IP 地址前两部分相同，因此仅转换第三部分即可。第一小题：95->0101, 1111，第一个和第二个地址都匹配，然后选择最长的，即 135.46.80.0。第二小题：161->1010, 0001，101 和 100 不匹配，因此选择 123.0.0.1 作为下一跳地址。

5、In a TCP/IP network, an original IP datagram contains 1500 bytes of data and 36 bytes of header. When it passes through a router with the maximum datagram length (header+data) of 420 bytes, it breaks into multiple fragments. In the format (header length, total length, identification, DF, MF, offset), the values of original datagram's header fields are (9,1536,13762,0,0,0).

a). The original datagram breaks into _4_ fragments, the length of the first fragment's data part is__384__ bytes, and the length of the last one's data part is _348_ bytes.

b). Please fill these fragment's header fields values with the format (header length, total length, identification, DF, MF, offset) in the following blanks:

The first fragment: 9 , 420 , 13762 , 0 , 1 , 0

The second fragment: 9 , 420 , 13762 , 0 , 1 , 48

The last fragment: 9 , 384 , 13762 , 0 , 0 , 144

Answer:

a). 1500+36=1536 Bytes. 1536/420≈4 fragments. 420-36=384 Bytes. 所分成的每个段其 data 部分能够放下 384 Bytes, 1500-(3*384)=348 Bytes 为最后一段的 data length。

b). 4 Bytes(32 bit)为一行，36/4=9，即 Header 一共有 9 行；348+36=384 Bytes；所有 ID 都一样，不会改变；384/8=48, 384*3/8=144，减去头，只把数据部分的长度相加再除以 8 Bytes。

6、A large number of consecutive IP address are available starting at 202.101.0.0. Suppose that four organizations, A, B, C, and D, request 1024, 2000, 2000, and 4000 addresses, respectively, and in that order.

Please assign the IP address and the mask in the w.x.y.z/s notation.

Answer:

	第三字段	
202.101.0.0/22	0000 0011	分配 1024 个地址，空间足够
202.101.8.0/21	0000 0100	100~111，可提供 1024 个地址
202.101.16.0/21	0000 0111	不够分配 2048 个，因此不能为 4
202.101.0.32/20	0000 1000	分配 2048 个地址，空间足够
	0000 1111	
	0001 0000	分配 2048 个地址，空间足够
	0001 0111	
	0001 1000	1000~1111，可提供 2048 个地址
	0001 1111	不够分配 4096 个，因此不能为 24
	0010 0000	分配 4096 个地址，空间足够

Homework chapter1

1-

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. _____ bytes

2-

22. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

Q. Consider the effect of using slow start on a line with a 10-msec round-trip time and no congestion. The receive window is 24 KB and the maximum segment size is 2 KB. How long does it take before the first full window can be sent?
A. _____ msec

Points possible: 10
Unlimited attempts.

140/1140=0.1228

3-ch1-22 20m

Q. Suppose that the TCP congestion window is set to 18 KB and a timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB.
A. _____ KB

Points possible: 10
Unlimited attempts.

Q. A TCP machine is sending full windows of 65,535 bytes over a 1-Gbps channel that has a 10-msec one-way delay. What is the maximum throughput achievable? What is the line efficiency? (give your answer as xx.x)

maximum througput: _____ MB/s

line efficiency: _____ %

Box 1: Enter your answer as a number. Examples: 3, -4, 5.5
Enter DNE for Does Not Exist, oo for Infinity

Box 2: Enter your answer as a number. Examples: 3, -4, 5.5
Enter DNE for Does Not Exist, oo for Infinity

Points possible: 10
Unlimited attempts.

coax同轴电缆

Vaccum 真空 3*10^8

1bit 需 1/10^7s

2*10^8m/s

=20m

4-

What is used at the transport layer to stop a receiving host's buffer from overflowing?

- Segmentation
- Packets
- Acknowledgments
- Flow control

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Satellite

Request and response all need to go up and down

Which type of service is provided by TCP?

- request-reply
- acknowledged datagram
- reliable message stream
- reliable byte stream

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Submit

TCP uses _____ handshake scheme to establish connections.

- one-way
- two-way
- three-way
- four-way

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

5-

Which socket primitive is used to block the caller until a connection attempt arrives?

- bind
- listen
- connect
- accept

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

10247683*8/56000=337.042

10247683*8/1000000=18.874

10247683*8/10000000=1.887

10247683*8/100Mb=0.189 ok

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

 . The image is 1600 x 1200 x 3 bytes or 5,760,000 bytes. This is 46080000 bits. At 56,000 bits/sec, it takes about 822.857 sec. At 1,000,000 bits/sec, it takes 46.080 sec. At 10000000 bits/sec, it takes 4.608 sec. At 100000,OOO bits/sec, it takes about 0.461 sec. At bits/sec it takes about 46

6-1048576

 Q. A collection of five routers is to be connected in a point—to—point subnet. Between each pair of routers, the designers may put a high— speed line, a medium—speed line, a low—speed line, or no line. If it takes 100 ms of computer time to generate and inspect each topology, how long will it take to inspect all of them? (give your answer as xxx.xx) seconds

 . Five routers are to be connected in a point-to-point subnet. Between each pair of routers, the designers may put a high-speed line, a medium-speed line, a low-speed line, or no line. If it takes 100 ms of computer time to generate and inspect each topology, how long will it take to inspect all of them?

 Call the routers A, B, C, D, and E. There are ten potential lines: AB, AC, AD, AE, BC, BD, BE, CD, CE, and DE. Each of these has four possibilities (three speeds or no line), so the total number of topologies is 4 At 100 ms each, it takes 104,857.6 sec, or slightly more than 29 hours to inspect them all.

 img

- B

Which of the following description about OSI layers is incorrect? The physical layer is concerned with transmitting raw bits over a communication channel The data link layer is a true end—to—end layer, all the way from the source to the destination The network layer controls the operation of the subnet and determines how packets are routed from source to destination The application layer contains a variety of protocols that are commonly needed by users

待办事项 8-A

Which service model is connection—oriented service? virtual circuit service acknowledged datagram service client—server service datagram service Box 1: Select the best answer

9-ok

What is the name of PDU at the network layer of the OSI reference model? message frame o packet segment Box I: Select the best answer

待办事项 10-C

Some network systems support transmission to a subset of the machines. This mode of operation is called: flow control congestion control multicasting O broadcasting Box I: Select the best answer

Multicasting

Broadly two types of transmission technology are in widespread use – Broadcastlinks(Multicasting)

Broadcasting-mode of operation is called:

physical layer

1-10 |

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

2B log2V(2level provide 1bit)=12

Q. Consider the effect of using slow start on a line with a 10-msec round-trip time and no congestion. The receive window is 24 KB and the maximum segment size is 2 KB. How long does it take before the first full window can be sent?
A. _____ msec

Points possible: 10
Unlimited attempts.

Q. Suppose that the TCP congestion window is set to 18 KB and a timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB.
A. _____ KB

Points possible: 10
Unlimited attempts.

Q. A TCP machine is sending full windows of 65,535 bytes over a 1-Gbps channel that has a 10-msec one-way delay. What is the maximum throughput achievable? What is the line efficiency? (give your answer as xx.x)
maximum througput: _____ MB/s
line efficiency: _____ %

Box 1: Enter your answer as a number. Examples: 3, -4, 5.5
Enter DNE for Does Not Exist, oo for Infinity

Box 2: Enter your answer as a number. Examples: 3, -4, 5.5
Enter DNE for Does Not Exist, oo for Infinity

Points possible: 10
Unlimited attempts.

2-10| bandwith*2

Q. In a network that has a maximum TPDU data size of 128 bytes, a maximum TPDU lifetime of 30 sec, and an 8-bit sequence number, what is the maximum data rate per connection?
A. _____ kbps

Points possible: 10
Unlimited attempts.

SNR= 10^1.8=63.0957

Blog2（1+SNR）=13k*6=78

What is used at the transport layer to stop a receiving host's buffer from overflowing?

- Segmentation
- Packets
- Acknowledgments
- Flow control

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Ok 3:10| FDM 19600

Which type of service is provided by TCP?

- request-reply
- acknowledged datagram
- reliable message stream
- reliable byte stream

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Submit

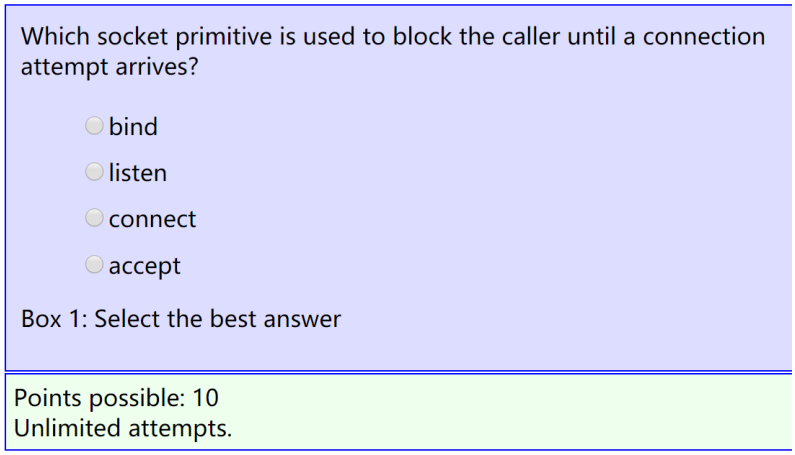
92000+8200=19600

TCP uses _____ handshake scheme to establish connections.

- one-way
- two-way
- three-way
- four-way

Box 1: Select the best answer

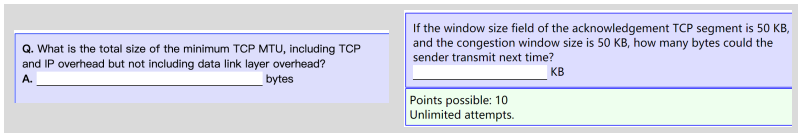
Points possible: 10
Unlimited attempts.



Guard bands 为中间间隔

CMDA +13

4-5|(+3,+1,+1,-1,-3,-1,-1,+1)



5-8|1 0 s 1

Q. A CDMA receiver gets the following chips: (—1 +1 —3 +1 1 — Assuming the chip sequences defined in figure following, 000101110 c:0101'100 001000010 a -1-1-1-1+1-1) which stations transmitted, and which bits did each one send? A. Choise the best answer • • • Station A send Station B send Station C send Station D send sent bit I sent bit 1 sent bit 1 sent bit I sent bit O sent bit O sent bit O sent bit O silence silence silence silence

6-6| 128000x 32?

Q. A signal is transmitted digitally over a 4—kHz noiseless channel with one sample every 125 psec. How many bits per second are actually sent for each of these encoding methods? A. 1) CCITT 2.048 Mbps standard: kbps A. 2) DPCM with a 4—bit relative signal value: kbps A. 3) Delta modulationard: kbps

8000sample/s

2-34. A signal is transmitted digitally over a 4-kHz noiseless channel with one sample every 125 gsec. How many bits per second are actually sent for each of these encoding methods? (a) CCITT 2.048 Mbps standard. (b) DPCM with a 4-bit relative signal value. (c) Delta modulation 'x . , 1/125ps=8000 (a)CCITT 8 , : 80000 = 64Kbpso DPCM , , : = 32Kbps. (c)Delta , : = 8Kbpso

Telephon1

Ok 7-6|13 6

Q. What is the percent overhead on a Tl carrier; that is, what percent of the 1.544 Mbps are not delivered to the end user? How about the El carrier ? A. For the TI carrier: your answer as an integer) A. For the El carrier: your answer as an integer) % (give % (give

. What is the percent overhead on a Tl carrier? That is, what percent of the 1.544 Mbps are not delivered to the end user? How does it relate to the percent overhead in OC-I or OC-768 lines?

37. The end users get 7 x 24 = 168 of the 193 bits in a frame. The overhead is therefore 25/193 = 13%. From Figure 2-41, percent overhead in OC-I is (51.84 - 49.536)/51.84 = 3.63%. In OC-768, percent overhead is (39813.12 -

E1 2/32=0.0625

8-10|50000

Q. A simple telephone system consists of two end offices and a single toll office to which each end office is connected by a I—MHz full-duplex trunk. The average telephone is used to make four calls per 8—hour workday. The mean call duration is 6 min. Ten percent of the calls are long—distance (i.e., pass through the toll office). What is the maximum number of telephones an end office can support? (Assume 4 kHz per circuit.)

 , A simple telephone system consists of two end offices and a single toll office to which each end office is connected by a I-MHz full-duplex trunk. The average telephone is used to make four calls per 8-hour workday. The mean call duration is 6 min. Ten percent of the calls are long distance (i.e., pass through the toll office). What is the maximum number of telephones an end office can support? (Assume 4 kHz per cir- cuit.) Explain why a telephone company may decide to support a lesser number of telephones than this maximum number at the end office.

 . Each telephone makes 0.5 calls/hour at 6 minutes each. Thus, a telephone occupies a circuit for 3 minutes/hour. Twenty telephones can share a circuit, although having the load be close to 100% (p = 1 in queuing terms) implies very long wait times. Since 10% of the calls are long distance, it takes 200 telephones to occupy a long-distance circuit full time. The interoffice trunk has 1,000,000/4000 = 250 circuits multiplexed onto it. With 200 telephones per circuit, an end office can support 200 x 250 = 50,000 telephones. Sup- porting such a large number of telephones may result in significantly long wait times. For example, if 5,()()() (10% of 50,000) users decide to make a long-distance telephone call at the same time and each call lasts 3 minutes, the worst-case wait time will be 57 minutes. This will clearly result in unhappy customers.

1phone 3min/hour--20phone share circuit

200-long distance 支持/curcit

interface：1M/4k=250circuit multiplex on

250*200=50000phones

Ok 9-A

 What is the transmission unit for the physical layer? bit frame packet segment Box 1: Select the best answer

sample

10-5| D

 A noiseless 2—k Hz channel is sampled every I msec. What is the maximum data rate? 1000 bps 2000 bps 4000 bps Can be infinite Box I: Select the best answer

ok11-5| B

 The cable between toll office and the end office of telephone company are known as the local loop trunk microwave line coaxial cable Box I: Select the best answer

 Telephone o Local loop End Office Toll connecting trunk Toll Intermediate switching Office(s) Very high bandwidth intertoll trunks Toll End Office Toll connecting trunk Telephone O Local loop

- 5|B

 An TI channel contains 24 PCM signals, its data rate is 2.048 Mbps 1.544 Mbps 64 kbps 100 Mbps Box 1: Select the best answer

-85

13-A

 An El channel contains 32 PCM signals, its data rate is 2.048 Mbps 1.544 Mbps 64 kbps 10 Mbps Box 1: Select the best answer

14-C

 An El channel contains 32 PCM time slots, the data rate of each time slot channel is 2.048 Mbps 1.544 Mbps 64 kbps 10 Mbps Box 1: Select the best answer

datalink

1 ok CRCs

01111 01111 10011 111010

2 CRCs ok

22. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?

111

3 stopandwait ?

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

Q. Consider the effect of using slow start on a line with a 10-msec round-trip time and no congestion. The receive window is 24 KB and the maximum segment size is 2 KB. How long does it take before the first full window can be sent?
A. _____ msec

Points possible: 10
Unlimited attempts.

Q. Suppose that the TCP congestion window is set to 18 KB and a timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB.
A. _____ KB

Points possible: 10
Unlimited attempts.

160

4 ?

1 6781

7 47470.2

15 64kbps

Q. In a network that has a maximum TPDU data size of 128 bytes, a maximum TPDU lifetime of 30 sec, and an 8-bit sequence number, what is the maximum data rate per connection?
A. _____ kbps

Points possible: 10
Unlimited attempts.

What is used at the transport layer to stop a receiving host's buffer from overflowing?

- Segmentation
- Packets
- Acknowledgments
- Flow control

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Which type of service is provided by TCP?

- request-reply
- acknowledged datagram
- reliable message stream
- reliable byte stream

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Submit

5 ?

TCP uses _____ handshake scheme to establish connections.

- one-way
- two-way
- three-way
- four-way

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Which socket primitive is used to block the caller until a connection attempt arrives?

- bind
- listen
- connect
- accept

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

772


重要 6 CRCs ok


A CRC generator polynomial is G(X)= many bits will the checksum be? 14 15 16 17 Box 1: Select the best answer How

C

7 sliding window s


Assume the sequence number has 5 bits. What is the maximum number of outstanding sending frames for a go back N protocol? Box 1: Enter your answer as a number. Examples: 3, —4, 5.5 Enter DNE for Does Not Exist, 00 for Infinity

sequence number

 An Example (Il) • Basically, the solution lies in allowing the sender to transmit up to w frames before blocking, instead of l. • How to find an appropriate value for w ? — 1) This capacity is determined by the bandwidth in bits/sec multiplied by the one-way transit time, or the bandwidth- delay product of the link. 50 x 103 x 250 x 10-3 = 12.5 x 103 bits — 2) We can divide this quantity by the number of bits in a frame to express it as a number of frames. —BD = 12.5 x 103 bits / 1000 bits/frame = 12.5 frames — 3) w should be set to 2BD + l. (w = 26 frames) Twice the bandwidth-delay is the number of frames that can be outstanding if the sender continuously sends frames when the round-trip time to receive an acknowledgement is considered. The "+1 " is because an acknowledgement frame will not be sent until after a complete frame is received.

8 selective repeat protocol

 Assume the sequence number has 4 bits. What is the maximum number of outstanding sending frames for a selective repeat protocol? Box 1: Enter your answer as a number. Examples: 3, —4, 5.5 Enter DNE for Does Not Exist, 00 for Infinity

9 CSMA B?

 Which is not the CSMA / CA rule of 802.11? If station X received RTS of station A, X must remain silent for a short time If station X received RTS, but did not receive CTS, then X may not transmit its data. If station X has not received RTS, but received CTS, then X may not transmit its data If station X has received both RTS and CTS, then X may not transmit its data Box 1: Select the best answer

10 gobackn 6ok

 After the sender first sends frames from 0 to 6 and at the end of timeout receives the acknowledgements for frame 1, 3, and 5, the next frame it will re—transmit is frame the protocol is go—back-n) 2 5 6 Box I: Select the best answer . (assume

MAC

HW

1 1030

ch4-2. A group of N stations share a 56-kbps pure ALOHA channel. Each station outputs a 1000-bit frame on an average of once every 100 sec, even if the previous one has not yet been sent (e.g., the stations can buffer outgoing frames). What is the maximum value of N?

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. _____ bytes

1bandwidth = 0.184*56kb/s=10304b/s

每个站 1000/100=10b/s

N=10304/10=1030

2 20ok

Q. What is the baud rate of the standard 10-Mbps Ethernet?

A. 20 Mbaud

What is the baud rate of the standard 10-Mbps Ethernet

3 ok

Q. Consider building a CSMA/CD network running at 100 Mbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size?

//Consider building a CSMA/CD network running at 100 Mbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size?

22. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?

1000b

3ge1000

0.01+0.001

4 C

The reason for binary exponential backoff//二进制指数倒退ppt56 in the classical Ethernet is that___

- this algorithm is　simple
- this algorithm is fast
- this algorithm is　adaptive to network load
- this algorithm is　scalable to network size

如果传输失败超过一次，将采用退避指数增长时间的方法（退避的时间通过截断二进制指数退避

算法(truncated binary exponential backoff)来实现

1）确定基本退避时间（基数），一般定为2τ，也就是一个争用期时间，对于以太网就是51.2μs

2）定义一个参数K，为重传次数，K＝min[重传次数，10]，可见K≤10

3）从离散型整数集合[0，1，2，……，(2^k－1)]中，随机取出一个数记做R

那么重传所需要的退避时间为R倍的基本退避时间：即：T＝R×2τ。

4）同时，重传也不是无休止的进行，当重传16次不成功，就丢弃该帧，传输失败，报告给高层协议

5 B

When binary exponential backoff is used, a random number between 0 and ___ is chosen and that number of slots is skipped

- 511
- 1023
- 2047
- 4095

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

6 A

A network interface card mainly works at the ___ layer(s)

- physical and data link
- data link and network
- physical and network
- data link and transport

7 D

Which is not one of the important functions provided by **bridges**?

- reducing the collision domain
- increasing the data rate
- increasing the length of domain
- reducing the broadcast domain

8 C-ok

There is a 10 Mbps Ethernet switch with 10 ports each of which is connected to a single computer. Then every computer's data rate is ___Mbps.

- 1
- 2
- 10
- 100

9 B

___ work at the physical layer while ___ work at the data link layer. //ppt107

- Hubs, routers
- Hubs, switches
- Bridges, routers
- Repeaters, hubs

physical：repeater hub

datalink：Bridge switch

network：Router

10 C

What kind of media used by 1000Base-F network?

- Coaxial Cable

- Twisted Pairs
- Fiber Optics
- Power Lines

Network

HW5

IPv4-mask子网

240=1111 0000

100

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. _____ bytes

1 194.47.21.130

22. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?

8points

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

//8*16+0=128

Ans=194.（32+15）.（16+5）.(128+2)=194.47.21.130

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. _____ bytes

2 CIDR

![计算机生成了可选文字: Q.Arouterhasthefollowin Address/mask 135，46，56．0/22 135，46，60．0/22 192，53，40，0/23 default (CIDR)entriesinitsroutingtable: Nexthop 211，90，0．1 159，48，0．1 192，188，0，1 220．20，0．1 Foreachofthefollowing甲 addresses,whatdoestherouterdoifa packetwiththataddressarrives? A.Writecorrect丨Paddressofnextho No.《]135，46，57，14 「《《《《氵）135，46，522 印《]19253，40，7《]19253，56，7 Pointspossible:10 Unlimitedattempts. Nexthop](file:///C:/Users/黄琳铃/AppData/Local/Temp/msohtmlclip1/01/clip_image004.png)

根据子网掩码

Q. Suppose that the TCP congestion window is set to 18 KB and a timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB.
A. _____ KB

Points possible: 10
Unlimited attempts.

Q. A TCP machine is sending full windows of 65,535 bytes over a 1-Gbps channel that has a 10-msec one-way delay. What is the maximum throughput achievable? What is the line efficiency? (give your answer as xx.x)
maximum througput: _____ MB/s
line efficiency: _____ %

Box 1: Enter your answer as a number. Examples: 3, -4, 5.5
Enter DNE for Does Not Exist, oo for Infinity

Box 2: Enter your answer as a number. Examples: 3, -4, 5.5
Enter DNE for Does Not Exist, oo for Infinity

Points possible: 10
Unlimited attempts.

Q. In a network that has a maximum TPDU data size of 128 bytes, a maximum TPDU lifetime of 30 sec, and an 8-bit sequence number, what is the maximum data rate per connection?
A. _____ kbps

Points possible: 10
Unlimited attempts.

What is used at the transport layer to stop a receiving host's buffer from overflowing?

- Segmentation
- Packets
- Acknowledgments
- Flow control

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

3 ok 子网掩码 4094

Which type of service is provided by TCP?

- request-reply
- acknowledged datagram
- reliable message stream
- reliable byte stream

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Submit

··· 1111 0000 0000 0000

2的12次 =4096-2

全0全1不能用

TCP uses _____ handshake scheme to establish connections.

- one-way
- two-way
- three-way
- four-way

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

What is used at the transport layer to stop a receiving host's buffer from overflowing?

- Segmentation
- Packets
- Acknowledgments
- Flow control

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

4

Which socket primitive is used to block the caller until a connection attempt arrives?

- bind
- listen
- connect
- accept

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

900bytes

20bytes header

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?

_____ KB

Points possible: 10
Unlimited attempts.

 Il' datagram Will be tragmented Into wo IY datagrams at ll. No other fragmentation will occur. Link A-RI: Length = 940; x; DF O; MF -O, • Offset = 0 • I Offset = O • I Offset = 0 Link RI-R2: (l) Length (2) Length Link R2-B: (l) Length (2) Length 500, • ID = 460, • ID = 500; ID = 460; ID DF MF = O; Offset = 60 = 0; Offset = 60

5 CIDR

 Q. A large number of consecutive IP address are available starting at 198.16.0.0. Suppose that four organizations, A, B, C, and D, request 4000, 2000, 4000, and 8000 addresses, respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in w.x.y.z/s notation. A. Fill your answer in the blank Org# c First IP Last IP net/mask Points possible: 10 Unlimited attempts.

198.16.0.0		**255.255.240.0 /20**
198.16.16.0	**198.16.15.255**	**255.255.248.0 /21**
198.16.23.255	**198.16.23.255**	**255.255.240.0 /20**
		255.255.224.0

 198. 16. o. 0/20 198. 16. 15. 255 198. 16. 23. 255 c 198. 16. 47. 255 198. 16. 95. 255 198. 16.0 0 198. 16. 16. o 198. 16. 32. o 198. 16. 64. o 198. 16. 16. 0/21 198. 16. 32. 0/20 198. 16. 64. 0/19

19

从194.24.0.0开始

![大学剑桥爱丁堡（可用）牛津第一个地址194．24 0 194．24．&0 194．24」2．0]94．24」6．0 最后一个地址 194．24，7．255 194．2生1L255 194．24，巧，255 194．24．3 L255 多少地址 2048 1024 1024 4096 前缀 194．24．0．0/21 194．24．8．0/22 194．24」2．0觇2 194．24．]6．0/20](file:///C:/Users/黄琳铃/AppData/Local/Temp/msohtmlclip1/01/clip_image016.png)

6 IPv6ok 128

 How many bits does the address of IPv6 have? 32 64 128 256 Box 1: Select the best answer

12points？

32*4=128

7 Bx Dok

 Without using IPv6, which can solve the problem of running out of IP addresses? class full addressing subnetting class addressing NAT Box I: Select the best answer

5points

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. _____ bytes

8 D

为什么16不行 11110000 00000000

What is the valid host range for subnet 172.16.10.16, mask 255.255.255.240?

 What is the valid host range for subnet 172.16.10.16, mask 255.255.255.240? 172.16.10.20 through 172.16.10.22 172.16.10.16 through 172.16.10.23 172.16.10.17 through 172.16.10.31 172.16.10.17 through 172.16.10.30 Box 1: Select the best answer Points possible: 5 Unlimited attempts.

0001 0000

16+15=31

Valid 全0/1不能作为ip地址 16-31（31代表1111 不能作为地址）17-30

9 A ok

 The checksum in the IP packet covers just the header just the data the header and the data just the source and destination addresses Box I: Select the best answer Points possible: 5 Unlimited attempts.

10 D

 A router has two IP interfaces, one IP address is 192.168.11.25/24, and the other IP address is 192.168.13.0 192.168.11.26 192.168.13.255 192.168.13.26 (assume use same subnet mask). Box I: Select the best answer Points possible: 5 Unlimited attempts.

B和25是同一个IP interfaces

全**0**/全**1** 不是有效的**IP**地址

11 B ok

 Suppose two hosts A and B have IP address 10.10.1.10 and 10.10.2.10 respectively. If they are in a same subnet, what is the subnet mask? 255.0.o.o 255.255.0.0 255.255.255.0 255.255.255.255 Box 1: Select the best answer Points possible: 5 Unlimited attempts.

12 Cok

 Which IP address is a loopback address? I.o.o.l 192.168.0.1 127.0.0.1 172.0.0.1 Box 1: Select the best answer Points possible: 5 Unlimited attempts.

13 Dok

哪个不是不会出现在Internet数据报中的专用地址？

Datagram通过网络传输的数据的基本单元 个报头（header）和数据本身

 Which is not the private address that will not appear in Internet datagram? 10.3.18.82 192.168.8.3 10.214.0.1 172.33.8.8 Box 1: Select the best answer Points possible: 5 Unlimited attempts.

The organizations that distribute IP addresses to the world reserves a range of IP addresses for *private networks*.

10.0.0.0 - 10.255.255.255

172.16.0.0 - 172.31.255.255

192.168.0.0 - 192.168.255.255

14 Bok

 Which protocol is used in command ARP ICMP RARP ECHO Box I: Select the best answer Points possible: 5 Unlimited attempts. "ping 10.214.8.9"?

ping 使用的是ICMP协议

15 B

 Which is not a legal IPV6 address? Box I: Select the best answer Points possible: 5 Unlimited attempts.

Transport

1

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. _____ bytes

22. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?

5.5.5 packet fragmentation-

Maximum payloads

1500 bytes for Ethernet and 2272 bytes for 802.11. IP is more generous, allows for packets as big as 65,515 bytes.

A source don't know how small packets must be to get there

This packet size is called the **Path MTU** (**Path Maximum Transmission Unit**). Even if the source did know the path MTU, packets are routed independently in a connectionless network such as the Internet.

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

2

Q. Consider the effect of using slow start on a line with a 10-msec round-trip time and no congestion. The receive window is 24 KB and the maximum segment size is 2 KB. How long does it take before the first full window can be sent?
A. _____ msec

Points possible: 10
Unlimited attempts.

3

Q. Suppose that the TCP congestion window is set to 18 KB and a timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB.
A. _____ KB

Points possible: 10
Unlimited attempts.

4

Q. A TCP machine is sending full windows of 65,535 bytes over a 1-Gbps channel that has a 10-msec one-way delay. What is the maximum throughput achievable? What is the line efficiency? (give your answer as xx.x)

maximum througput: _____ MB/s

line efficiency: _____ %

Box 1: Enter your answer as a number. Examples: 3, -4, 5.5
Enter DNE for Does Not Exist, oo for Infinity

Box 2: Enter your answer as a number. Examples: 3, -4, 5.5
Enter DNE for Does Not Exist, oo for Infinity

Points possible: 10
Unlimited attempts.

5

Q. In a network that has a maximum TPDU data size of 128 bytes, a maximum TPDU lifetime of 30 sec, and an 8-bit sequence number, what is the maximum data rate per connection?

A. _____ kbps

Points possible: 10
Unlimited attempts.

6

What is used at the transport layer to stop a receiving host's buffer from overflowing?

- Segmentation
- Packets
- Acknowledgments
- Flow control

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

7d

Which type of service is provided by TCP?

- request-reply
- acknowledged datagram
- reliable message stream
- reliable byte stream

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

Submit

8 c

TCP uses _____ handshake scheme to establish connections.

- one-way
- two-way
- three-way
- four-way

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

9

Which socket primitive is used to block the caller until a connection attempt arrives?

- bind
- listen
- connect
- accept

Box 1: Select the best answer

Points possible: 10
Unlimited attempts.

d

If the window size field of the acknowledgement TCP segment is 50 KB, and the congestion window size is 50 KB, how many bytes could the sender transmit next time?
_____ KB

Points possible: 10
Unlimited attempts.

80-80：answer80

根据后面的数值

window size 官方定义是：在未收到对方确认报文时，发送端能发送的字节（八字节）数；

MSS(Max Segment Size) 是TCP数据包每次能够传输的最大数据分段，其中并不包括TCP首部。而且MSS只出现在syn报文段中。一般来说，MSS的值在不分段的情况会越大越好，比如一个外出接口的MSS值是MTU减去IP和TCP首部长度。

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. _____ bytes

Q. What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?
A. _____ bytes