

Redes de Computadores

Início	segunda, 16 de janeiro de 2023 às 17:31
Estado	Prova submetida
Data de submissão:	segunda, 16 de janeiro de 2023 às 19:01
Tempo gasto	1 hora 30 minutos
Nota	10,90 de um máximo de 20,00 (55%)

Pergunta 1

Não respondida Pontuação 1,00 Destacar pergunta

The transport layer receives a service from the IP network layer that

- ☐ a. guarantees delivery of all packets but not their correct sequence.
- ☐ b. does not guarantee delivery of all packets but guarantees the sequence of packets delivered.
- ☐ c. does not guarantee the delivery of all packets nor their sequence.
- ☐ d. guarantees delivery of all packets in the correct sequence.

A resposta correta é: does not guarantee the delivery of all packets nor their sequence.

Mostrar/Ocultar



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1	2	3	4	5	6
	✓	✓	✓	✓	✓
7	8	9	10	11	12
✓				✓	
13	14	15	16	17	18
✓	✓				
19	20				
✓	✓				

Mostrar uma página de cada vez

Terminar revisão

Pergunta 2

Correta

Pontuou 1,00 de 1,00

🚩 Destacar pergunta

If a 16QAM modulation (16-point constellation) is used for data transmission and a rate of 10 ksymbol/s (10 kbaud) is delivered, the bitrate obtained is

- ☐ a. 10 kbit/s.
- ☒ b. 40 kbit/s.
- ☐ c. 30 kbit/s.
- ☐ d. 20 kbit/s.



A resposta correta é: 40 kbit/s.

Pergunta 3

Correta

Pontuou 1,00 de 1,00

🚩 Destacar pergunta

If a data frame has a length of L bits and the probability that a bit is received in error is B , the probability that the frame is received in error is

- ☐ a. L^B
- ☐ b. $1 - (1 - L)^B$
- ☐ c. B^L
- ☒ d. $1 - (1 - B)^L$



A resposta correta é: $1 - (1 - B)^L$

Pergunta 4

Correta

Pontuou 1,00 de 1,00

🚩 Destacar pergunta

Consider the ARQ Go-Back-N mechanism using a window $W=3$. The receiver's behaviour is described in a notation in which $?I(0)!.RR(1)$ represents the reception (?) of the $I(0)$ message followed (.) by the transmission (!) of the $RR(1)$ message. After the occurrence of the events $?I(0)!.RR(1).?I(1)!.RR(2).?I(3)$, the receiver

- ☒ a. Discards the received $I(3)$ message and transmits $REJ(2)$.
- ☐ b. Stores the received $I(3)$ message but does not transmit REJ nor RR .
- ☐ c. Discards the received $I(3)$ message and transmits $RR(2)$.
- ☐ d. Stores the received $I(3)$ message and sends $REJ(2)$ to the sender.



A resposta correta é: Discards the received $I(3)$ message and transmits $REJ(2)$.


Pergunta 5

Correta

Pontuou 1,00 de 1,00

🚩 Destacar pergunta

In the MAC protocol CSMA/CD (carrier sensing, collision detection), when a transmitting station detects a collision, this station

- ☒ a. Aborts the frame transmission and retransmits the frame after waiting a random number of timeslots. 
- ☐ b. Continues to transmit the frame until the end and retransmits the frame in the next timeslot.
- ☐ c. Continues to transmit the frame until the end and retransmits the frame after waiting a random number of timeslots.
- ☐ d. Aborts the frame transmission and retransmits the frame in the next timeslot.

A resposta correta é: Aborts the frame transmission and retransmits the frame after waiting a random number of timeslots.

Pergunta 6

Correta Pontuou 1,00 de 1,00  Retirar destaque

The Identification (ID) field of the IP header is used to

- ☐ a. select the socket at the receiver where data in the packet should be delivered.
- ☐ b. specify the virtual circuit (VC) that the IP packet belongs to.
- ☒ c. perform fragmentation and reassembly of IP datagrams.
- ☐ d. select the appropriate entry in the NAT table.



A resposta correta é: perform fragmentation and reassembly of IP datagrams.

Pergunta 7

Correta

Pontuou 1,00 de 1,00

🚩 Destacar pergunta

At a given instant, when the congestion window of a TCP connection is 1000 segments, a timeout occurs, indicating the loss of a packet. The sender reacts by

- ☐ a. setting the congestion window to 500 segments and the slow start threshold to 750 segments.
- ☐ b. setting both the congestion window and the slow start threshold to 500 segments.
- ☐ c. setting the congestion window to 500 segments and the slow start threshold to 1000 segments.
- ☒ d. setting the congestion window to 1 segment and the slow start threshold to 500 segments.



A resposta correta é: setting the congestion window to 1 segment and the slow start threshold to 500 segments.

Pergunta 8

Incorreta Pontuação -0,10 de 1,00  Destacar pergunta

The flow control function of TCP is based on

- ☐ a. the use of a flag in the TCP header for the receiver to tell the sender to temporarily stop sending data.
- ☒ b. the receiver informing the sender of the maximum bit rate at which it may send data.
- ☐ c. the receiver informing the sender of how much free space for new data it has in the receiving buffer.
- ☐ d. the sender inferring that the receiver is overwhelmed when no ACKs are received.



A resposta correta é: the receiver informing the sender of how much free space for new data it has in the receiving buffer.

Pergunta 9

Não respondida

Pontuação 1,00

 Retirar destaque

A router receives a packet with destination IP address 23.45.67.89. Its routing table consists of the following entries {<23.45.67.128/25, 0.0.0.0>, <23.45.64.0/24, 23.45.67.129>, <0.0.0.0/0, 23.45.67.130>}, where each entry is in the format <networkAddress/prefixLength, gateway>.

The router delivers the packet

- ☐ a. to its neighbor router with IP 23.45.67.130.
- ☐ b. to its neighbor router with IP 23.45.67.129.
- ☐ c. directly to the destination terminal (23.45.67.89).
- ☐ d. to its neighbor router with IP 0.0.0.0.

A resposta correta é: to its neighbor router with IP 23.45.67.130.

Pergunta 10

Não respondida

Pontuação 1,00

🚩 Destacar pergunta

A browser uses HTTP 1.1 with persistent connections and pipelining to obtain, from a web server, an HTML page with 5 images. The time it takes to download this page is the total transmission time of the HTML file and the 5 images plus

- ☐ a. 7 round-trip times.
- ☐ b. 6 round-trip times.
- ☐ c. 3 round-trip times.
- ☐ d. 12 round-trip times.

A resposta correta é: 3 round-trip times.


Pergunta 11

Correta

Pontuou 1,00 de 1,00

🚩 Destacar pergunta

Two stations communicate using a Selective Repeat ARQ mechanism. The channel capacity in each direction is 1 Mbit/s, the propagation delay in each direction is 18 ms and the Information frames have a fixed size of 750 Bytes. Assume that 3 bits are used to number the Information frames and that the control frames have a negligible size. Let us also assume BER=0. In this scenario the maximum throughput (débito) is

Tmax=  kbit/s.

Resposta correta: 570


Pergunta 12

Incorreta

Pontuou 0,00 de 1,00

 Retirar destaque

For the above situation, consider the sender has a block of 75 kBytes of data to transmit. The time required to send this data block, until the last acknowledgment is received by the sender, is


Tsend=  ms.

Resposta correta: 1050


Pergunta 13

Correta

Pontuou 1,00 de 1,00

 Retirar destaque

Assuming a frame size of 100 Bytes, a Bit Error Ratio $BER = 10^{-4}$ and any number of bits for numbering the Information frames, the maximum efficiency possible for this situation is

S=  %.

Resposta correta: 92


Pergunta 14

Correta

Pontuou 1,00 de 1,00

🚩 Destacar pergunta

An output port of a router is modeled by a M/M/1 queue. In average, 120 pac/s are transmitted through this port. The packets have an average length of 1500 Bytes. The link associated with the port has an utilization of 80 %. In these conditions, the average packet delay is

$T =$  ms.

Resposta correta: 33


Pergunta 15

Incorreta

Pontuou 0,00 de 1,00

Retirar destaque

For the same output port capacity and the same transmission rate of 120 pac/s, if the average packet length becomes 500 Bytes, the time required to transmit a packet (not including the waiting time in the queue) becomes

$T_s =$  ms.

Resposta correta: 2

Pergunta 16

Incorreta

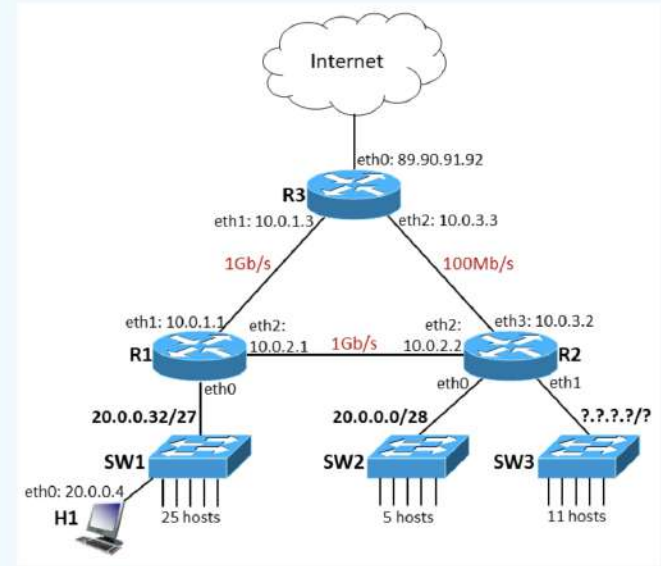
Pontuou 0,00 de 1,00

🚩 Destacar pergunta

For the situation of Question 14, if all the packets have the same constant length of 1500 Bytes, the average waiting time of a packet in the queue is

$T_w =$ ✖ ms.

Resposta correta: 13



The figure shows a diagram of the network of a company, containing three routers (R1, R2, R3) and three ethernet switches (SW1, SW2, SW3). The company bought the public IP address block 20.0.0.0/25 for assigning addresses to the LANs corresponding to each switch, which is a work in progress. What network address and prefix length must be assigned to the LAN of switch SW3? Use the format a.b.c.d/n, or "impossible" if no feasible assignment can support the 11 hosts.

Resposta:

20.0.0.19/28

✖

Resposta correta: 20.0.0.16/28

Pergunta 18

Incorreta

Pontuou 0,00 de 1,00

🚩 Destacar pergunta

The highest possible address that can be assigned to interface eth0 of R2 is (use format a.b.c.d)

Resposta: 20.0.0.42



Resposta correta: 20.0.0.14

Pergunta 19

Correta Pontuou 1,00 de 1,00  Destacar pergunta

Considering that shortest path routing is used and the cost of a link is inversely proportional to its capacity, the default gateway of router R2 should be (use format a.b.c.d)

Resposta: 10.0.2.1



Resposta correta: 10.0.2.1

Pergunta 20

Correta

Pontuou 1,00 de 1,00

🚩 Destacar pergunta

When host H1 sends a packet to a server on the Internet and R1 forwards that packet to R3, the source IP and MAC addresses of the forwarded packet are, respectively,

- ☐ a. 20.0.0.4 and the MAC address of H1's eth0
- ☒ b. 20.0.0.4 and the MAC address of R1's eth1
- ☐ c. 10.0.1.1 and the MAC address of R1's eth1
- ☐ d. 10.0.1.1 and the MAC address of H1's eth0



A resposta correta é: 20.0.0.4 and the MAC address of R1's eth1