Redes de Computadores

Início	segunda, 16 de janeiro de 2023 às 17:30
Estado	Prova submetida
Data de submissão:	segunda, 16 de janeiro de 2023 às 18:58
Tempo gasto	1 hora 28 minutos
Nota	**8,80** de um máximo de 20,00 (**44**%)

Pergunta 1

Correta Pontuou 1,00 de 1,00 Destacar pergunta

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

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

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

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. 20 kbit/s.
c. 30 kbit/s.
d. 40 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. $1-(1-B)^L$ ✔
b. L^B
c. B^L
d. $1-(1-L)^B$

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

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

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 Destacar pergunta

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

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

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 1000 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 750 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 Pontuou -0,10 de 1,00 Destacar pergunta

The flow control function of TCP is based on

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

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

Correta Pontuou 1,00 de 1,00 Destacar pergunta

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. to its neighbor router with IP 0.0.0.0.
d. directly to the destination terminal (23.45.67.89).

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

Pergunta 10

Incorreta Pontuou -0,10 de 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. 3 round-trip times.
c. 6 round-trip times.
d. 12 round-trip times.

A resposta correta é: 3 round-trip times.

Pergunta 11

Incorreta Pontuou 0,00 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= 444 ✖ kbit/s.

Resposta correta: 570

Pergunta 12

Incorreta Pontuou 0,00 de 1,00 Destacar pergunta

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= 618 ✖ ms.

Resposta correta: 1050

Pergunta 13

Não respondida Pontuação 1,00 Destacar pergunta

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

Incorreta Pontuou 0,00 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

$T =$ 8,3 ✖ ms.

Resposta correta: 33

Pergunta 15

Não respondida Pontuação 1,00 Destacar pergunta

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

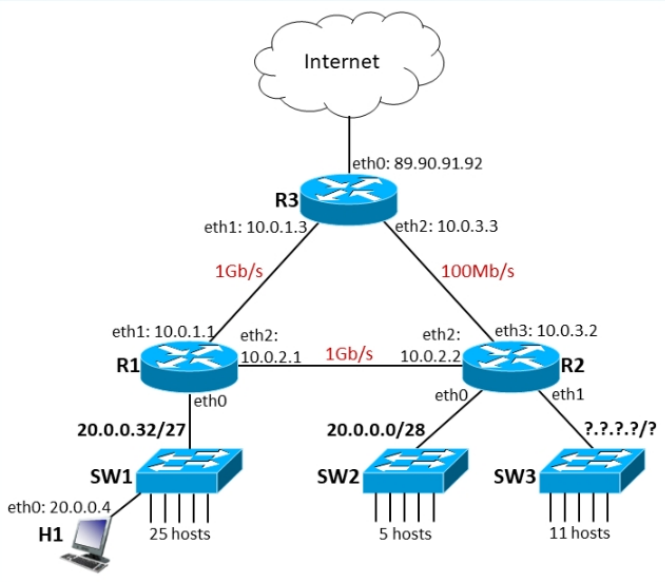
Incorreta Pontuou 0,00 de 1,00 Destacar pergunta

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

$T_w =$ 33,3 ✖ ms.

Resposta correta: 13

Pergunta 17 Incorreta Pontuou 0,00 de 1,00 Destacar pergunta



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: 20.0.0.128/28

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: 20.0.0.32 ✖

Resposta correta: 20.0.0.14

Pergunta 19

Não respondida Pontuação 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: ✖

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. 10.0.1.1 and the MAC address of R1's eth1
b. 10.0.1.1 and the MAC address of H1's eth0
c. 20.0.0.4 and the MAC address of H1's eth0
d. 20.0.0.4 and the MAC address of R1's eth1 ✔

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