Started on	Tuesday, 8 February 2022, 8:15 AM
State	Finished
Completed on	Tuesday, 8 February 2022, 8:45 AM
Time taken	30 mins 1 sec
Grade	**8.00** out of 20.00 (**40**%)

Question 1

Correct

Mark 1.00 out of 1.00

Flag question

If in a system, communication can happen in both directions between a pair of machines but only in one direction at one time, the type of communication is called

Select one:

- Four-wire circuit
- Simplex
- Half-Duplex ✓
- Full-Duplex

The correct answer is: Half-Duplex

Question 2

Correct

Mark 1.00 out of 1.00

Flag question

Which of the following are true (choose all that are true)?

Select one or more:

- Optical fibers can support higher data rates than coaxial cables ✓
- Analog transmissions incur more thermal noise than digital transmissions ✗
- Cat-7 UTP cables can support higher data rates than multimode fibers
- Transmission over optical fibers are not affected by impulse noise ✓

The correct answer is: Transmission over optical fibers are not affected by impulse noise, Optical fibers can support higher data rates than coaxial cables

Question 3

Correct

Which of the following are true (choose all that are true)?

Select one or more:

Mark 1.00 out of 1.00

Flag question

- [x] Manchester encoding requires a higher bandwidth than NRZI ✓
- [x] Bipolar AMI can detect some bit errors ✓
- [ ] NRZI encoding has no dc component
- [ ] Manchester encoding will require less bandwidth than Differential Manchester for both patterns with all 1's and all 0's

The correct answer is: Manchester encoding requires a higher bandwidth than NRZI, Bipolar AMI can detect some bit errors

Question 4

Correct

Mark 1.00 out of 1.00

Flag question

Which of the following statements is true for checksum computation if two data words are swapped in the bit stream over which the checksum is computed?

Select one:

- ( ) The checksum value always decreases
- ( ) The checksum value always increases
- (•) The checksum value always remains the same ✓
- ( ) The checksum value can stay the same, increase, or decrease depending on the words swapped

The correct answer is: The checksum value always remains the same

Question 5

Correct

Mark 1.00 out of 1.00

Flag question

Which of the following statements are true about CSMA/CA (choose all that are true)?

Select one or more:

- [x] In the exposed terminal case, the exposed terminal can transmit to another station other than X if it hears an RTS but not the CTS from station X. ✓
- [ ] In the hidden terminal case, the hidden terminal defers its transmission after hearing the RTS
- [ ] The RTS and CTS scheme fully solves the hidden and exposed terminal problems
- [x] The interframe space can take more than one value to allow prioritization among transmitters ✓

The correct answer is: In the exposed terminal case, the exposed terminal can transmit to another station other than X if it hears an RTS but not the CTS from station X., The interframe space can take more than one value to allow prioritization among transmitters

Question 6

Correct

Mark 1.00 out of 1.00

Flag question

7 data sources, each with a bit rate of 500 kbps, are to be combined using TDM. The sources are bit-multiplexed (1 slot in a frame = 1 bit), with 1 control/synchronizing bit per frame. What is the duration of a frame in microseconds?

Answer: 2 ✓

The correct answer is: 2

Question 7

Incorrect

Mark 0.00 out of 2.00

Flag question

Suppose that for transmission over a channel with bandwidth 25 Mhz, the signal to noise ratio is 10 dB. What is the number of signal levels needed to achieve the theoretical maximum capacity of the channel?

Answer: 3 ✗

The correct answer is: 4

Question 8

Incorrect

Mark 0.00 out of 2.00

Flag question

Consider a transmitter sending bits at the rate 10 Mbps. A 0 is encoded as 0V and a 1 is encoded as 5V. The receiver samples a bit after 1/4th time of a bit interval from the start of the interval to see if the bit is a 0 or 1. If the receiver's clock runs 1% slower than the transmitter's clock, after how many bits can the receiver potentially get a bit in error? Assume that the clocks are initially synchronized perfectly.

Answer: 4 ✗

The correct answer is: 75

Question 9

Correct

Mark 2.00 out of 2.00

Flag question

Consider that you are sending the bit pattern 01001011101011. What would be the number of signal transitions for Differential Manchester encoding? Assume that low = 0V, high = 5V, and the initial level at the start of bit 1 is a low.

Answer: 20 ✓

The correct answer is: 20

Question 10

Incorrect

Suppose you are transmitting the frame 101010. 4-bit CRC is used for error detection, with the generator pattern P = 11001. What will be the extra check/error-detecting bits added? (Just type the bits with no space before, in the

Mark 0.00 out of 2.00

Flag question

middle, or after).

Answer: 1010

The correct answer is: 1001

Question 11

Incorrect

Mark 0.00 out of 2.00

Flag question

Suppose 4 machines are trying to transmit using p-persistent CSMA with p = 0.01. If they all sense the medium to be free at the same time, what is the probability that one of them will be able to transmit with no collision? Write your answer as 0.xyz, with the computed probability truncated to three decimal places after the decimal point.

Answer: 4

The correct answer is: 0.038

Question 12

Not answered

Marked out of 2.00

Flag question

Consider a system using CSMA/CD. The maximum distance between any 2 machines can be 3 km, with a maximum of 4 repeaters in between. Each repeater introduces a delay of 3 microseconds. If the transmission speed is 10 Mbps, and the propagation speed is 2×10^8 m/sec, what is the minimum frame size required (in number of bytes)?

Answer:

The correct answer is: 68

Question 13

Not answered

Marked out of 2.00

Flag question

Suppose that Stop-and-Wait is used for flow control. The data rate is 100 Mbps, frame size is 2500 bytes, the distance between the sender and the receiver is 1 km, and the propagation speed is 2×10^8 m/sec. The ack frame size is 100 bytes, and the processing time (time to send ack after receiving the whole frame) is 5 microseconds. What is the line utilization (in percentage, ignoring decimal part)?

Answer:

The correct answer is: 89

Finish review

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