CISC 7332X Spring 2022 Midterm Exam

You may use calculators on this exam. Pick the best answer that fits the question. 5-points per question. Not all of the answers may be correct. If none of the answers fit, write your own answer.

Answers must be emailed in plain text (no formatting, no attachments). Email *must* have your *full name* at the *top*. Answers to questions must be clearly marked (question number before each answer), and be in sequence (question 1 should come before question 2, etc.).

Email must arrive by 10:30PM on 2022-04-12.

1. The correct order of OSI model layers is:

    a. Application, Presentation, Session, Transport, Network, Data Link, Physical

    b. Application, Presentation, Data Link, Transport, Network, Session, Physical

    c. Application, Presentation, Transport, Session, Network, Data Link, Physical

    d. Application, Presentation, Session, Network, Transport, Data Link, Physical

    e. None of the above, answer is: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

2. Which protocol is used to find the MAC address:

    a. DNS

    b. SMTP

    c. TCP

    d. ARP

    e. None of the above, answer is: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

3. Which if the below is connectionless?

    a. FTP

    b. SMTP

    c. DNS

    d. HTTP

    e. Answer is: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

4. The MAC layer is responsible for:

    a. Routing.

    b. End to end error correction.

    c. Converting ASCII to EBCDIC.

    d. Dealing with collissions.

    e. None of the above, answer is: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

5. Time Division Multiplexing is applicable when:

    a. Carrier wavelength propagation delay is lower.

    b. Carrier bandwidth exceeds that of our signal.

    c. Carrier data rate exceeds that of our signal.

d. Signal to Noise ratio is lower.

e. None of the above, answer is: _____

6. The purpose of a network mask is:

   a. To extract the host MAC address from the Ethernet frame.

   b. To add to the host address and get network address.

   c. To find the network address.

   d. To cover up ugly IP addresses.

   e. None of the above, answer is: _____

7. Frequency Division Multiplexing is applicable when:

   a. Carrier wavelength propagation delay is lower.

   b. Signal to Noise ratio is lower.

   c. Carrier data rate exceeds that of our signal.

   d. Carrier bandwidth exceeds that of our signal.

   e. None of the above, answer is: _____

8. Ring network,

   a. devices connect using a passive interface.

   b. devices connect using an active interface.

   c. LLC layer handles CSMA/CD

   d. all of the above

   e. None of the above, answer is: _____

9. On a bus network,

   a. devices connect using an active interface.

   b. LLC layer handles CSMA/CD

   c. devices connect using a passive interface.

   d. all of the above

   e. None of the above, answer is: _____

10. If bandwidth is 24Mhz, and SNR is 15, max capacity of the channel is (in Mbps):

    e. Answer is: _____

11. Noise has 4W of power. We boost signal power to 64W. What's the bandwidth required to achieve 96Kbps capacity?

    e. Answer is: _____

12. Continuing from previous question, how many voltage levels are required?

    e. Answer is: _____

13. If bandwidth is 5Mhz, and SNR is 15, about how many voltage levels are required to achieve maximum capacity

    e.   Answer is: _____

14. If SNR is 20, what's the SNR_{dB}?

    e.   Answer is: _____

15. If bandwidth is 4Mhz, and SNR_{dB} is 20, what's the error free capacity of the channel?

    e.   Answer is: _____

16. We are transmitting data at a rate of 1000 bits per second. During transmission, the noise introduces errors so that, on average, 4% of bits are received incorrectly (i.e.: a 0 as 1, or 1 as 0). The maximum error free capacity of this channel is (in bps):

    e.   Answer is: _____

17. We are transmitting data at 25W, and detect only 20W when recieving, attenuation in decibels is:

    e.   Answer is: _____

18. The Data-Link layer is responsible for:

    a.   Routing

    b.   Name resolution

    c.   Pinging

    d.   Point to Point transmission

    e.   None of the above, answer is: _____

19. Routers operate at:

    a.   Data Link Layer

    b.   Physical Layer

    c.   Session Layer

    d.   Network layer

    e.   None of the above, answer is: _____

20. Network switches operate at:

    a.   Data Link Layer

    b.   Session Layer

    c.   Network layer

    d.   Physical Layer

    e.   None of the above, answer is: _____