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Question Paper Code: 94C02

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2022

Fourth Semester

Computer Science and Business System

19UCB402 - COMPUTER NETWORKS

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Which of the following topology has maximum cabling requirements? CO1- U
(a) Mesh topology (b) Star topology (c) Bus topology (d) Ring topology
- A Link may have a bandwidth of B bps, but we can only send T bps through this link. Compare T and B CO1- U
(a) T is equal to B (b) T always less than B
(c) T always greater than B (d) T is less than B
- High-level Data Link Control (HDLC) is a ___ communication over point-to-point and multi point links. CO1- U
(a) Juggling standards and business needs (b) Obeying the rules
(c) Acting on a considered judgment (d) None of these
- In Go-Back-N ARQ, if 5 is the number of bits for the sequence number, then the maximum size of the receive window must be _____. CO1- U
(a) 1 (b) 15 (c) 16 (d) 31
- On which factors do the size of block depends in classless addressing? CO1- U
(a) Nature & size of an entity (b) Number of addresses
(c) Availability of the address space (d) All of the above
- IEEE802.11a, has data rate of _____ MBps CO1- U
(a) 1 (b) 2 (c) 6 (d) none of the above

7. Transport layer aggregates data from different applications into a single stream before passing it to _____ CO1- U
 (a) network address (b) host address (c) both (a) and (b) (d) none of the above
8. An endpoint of an inter-process communication flow across a computer network is called _____ CO1- U
 (a) socket (b) pipe (c) port (d) machine
9. The packet of information at the application layer is called _____ CO1- U
 (a) Packet (b) Message (c) Segment (d) Frame
10. Which field of cookie in WWW represents the server's directory structure by identifying the utilization of part associated with server's file tree? CO1- U
 (a) Domain (b) Path (c) Content (d) Secure

PART – B (5 x 2= 10 Marks)

11. Define Multiplexing and its types. CO1- U
12. Using 5-bit sequence numbers, what is the maximum size of the send and receive windows for each of the following protocols? CO2- App
13. In a block of addresses, we know the IP address of one host is 182.44.82.16/26. What are the first address and the last address in this block? CO2- App
14. Draw UDP Header Format CO1- U
15. Write down the characteristics of FTP CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) Assume that a voice channel occupies a bandwidth of 5kHz. We need to combine four voice channels into a link with a bandwidth of 10kHz to 30kHz. Show the configuration using the frequency domain. Assume there are no guard bands. CO2- App (16)

Or

- (b) Suppose a 100 Mbps point to point link is being set up between earth and a new lunar colony. The distance from moon to earth is approximately 3,85,000 kms and data travels over the link at the speed of light 3×10^8 m/sec. CO2- App (16)
- a. Calculate the minimum RTT for the link.
 - b. Using the RTT as the delay, calculate the delay X bandwidth product for the link.
- A camera on the lunar base takes pictures of earth and saves them in digital format. Suppose mission control on earth wishes to download most current image, which is 25MB. What is the minimum amount of time that will elapse between when the request for the data goes out and the transfer finished?
17. (a) Suppose we want to transmit the message 11001001 and protect it from errors using the CRC Polynomial X^3+1 . Use polynomial long division to determine the message that should be transmitted. Corrupt the left-most third bit of the transmitted message and show that the error is detected by the receiver using CRC Technique. CO2- App (16)
- Or
- (b) Explain the term “exponential backoff” in reference to CSMA/CD. Also explain how the CSMA/CD algorithm improves on the CSMA algorithm. CO2- App (16)
18. (a) Explain about packet switching in detail CO1- U (16)
- Or
- (b) Explain the distance vector routing algorithm. Mention the limitations of distance vector routing algorithm. CO1- U (16)
19. (a) Explain the characteristics and functionality of transmission control protocol CO1- U (16)
- Or
- (b) Explain the congestion control categories in Transport layer protocols. CO1- U (16)
20. (a) Explain the architecture of WWW CO1- U (16)
- Or
- (b) Explain different protocols in Application Layer CO1- U (16)

