C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 95403

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Fifth Semester

Electronics and Communication Engineering

19UEC503 - Data Communication and Networks

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Frequency of failure and network recovery time after a failure are measures of the _____ of a network. CO1-U

   (a) Performance (b) Reliability. (c) Security. (d) Feaibility.

2. Byte stuffing means adding a special byte to the data section of the frame when there is a character with the same pattern as the _____. CO1- U

   (a) Header. (b)Trailer. (c) Flag (d) None of the above

3. An organization is granted a block of classless addresses with the starting address 199.34.76.128/29. How many addresses are granted? CO2- App

   (a) 8 (b) 16 (c) 32 (d) 29

4. UDP packets have a fixed-size header of _____ bytes CO1- U

   (a) 16 (b) 8 (c) 40 (d) 10

5. In a _____ name space, a name is assigned to an address. A name in this space is a sequence of characters without structure. CO1- U

   (a) Flat. (b) Hierarchical. (c) Organized. (d) structure

PART – B (5 x 3= 15 Marks)

6. Calculate the bandwidth of the light for the following wavelength ranges (assume a propagation speed of 2×10^8 m): 1000 to 1200 nm CO2 App

7.		Compare and contrast byte-oriented and bit-oriented protocols. Which category has been popular in the past (explain the reason)? Which category is popular now (explain the reason)?	CO3 Ana	
8.		In an IPv4 packet, the value of HLEN is 1000 in binary. How many bytes of options are being carried by this packet?	CO2 App	
9.		Compare connectionless service & connection oriented service..	CO2 App	
10.		State advantages of stateless server of HTTP?	CO1 U	

PART – C (5 x 16= 80 Marks)

11.	(a)	Write a short note on various types of transmission media, highlighting their merits and Demerits.	CO1-U	(16)
		Or		
	(b)	Discuss about OSI reference model with neat sketch.	CO1-U	(16)
12.	(a)	Consider the use of 1000-bit frames on a 1Mbps channel with a 270 ms delay. What is the maximum link utilization for a) stop-and-wait flow control b) Sliding window flow control with a window size of 7	CO2- App	(16)
		Or		
	(b)	Explain the sliding window protocol with example	CO2- App	(16)
13.	(a)	(i) Explain briefly about IPv6 addressing.	CO3- Ana	(8)
		(ii) A block of addresses is granted to a small organization. We know that one of the addresses is 205.16.37.39/28. What is the first and last address in the block? How many addresses are there in the block?	CO3- Ana	(8)
		Or		
	(b)	(i) State the major difference between Distance Vector Routing and Link State Routing. Discuss how Distance Vector Routing works.	CO3- Ana	(8)
		(ii) What is the sub network address if the destination address is 200.45.34.56 and the subnet mask is 255.255.240.0?	CO3- Ana	(8)

14.	(a)	(i) Explain leaky bucket and token bucket algorithms in detail.	CO1- U	(8)
		(ii) Explain in detail about TCP connection establishment and connection termination with neat diagrams.	CO1- U	(8)
		Or		
	(b)	Discuss the various timers used by TCP to perform its various operations	CO1- U	(16)
15.	(a)	Perform encryption and decryption using the RSA algorithm, as below for the following: p=3; q=11, e=7; M=5	CO2- App	(16)
		Or		
	(b)	Predict the following cryptography (i) Substitution Method : HELLO (Mono and Poly Alphabet) (ii) Shift Cypher Method : FRIEND with key =15 (iii) Transposition Method : 2 4 1 3 (iv) Transposition Method : HELLO MY FRIEND	CO2- App	(16)