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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VI**

Branch: Electronics and Communication Engineering **Duration: 3 hrs.**

Course Code: 19EC6PCCCN **Max Marks: 100**

Course: COMPUTER COMMUNICATION NETWORKS

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	*CO*	*PO*	Marks
1	a)	Define computer networks. Discuss various types of networks topologies in a computer network. Also discuss various advantages and disadvantages of each topology.	**3**	**2**	**12**
	b)	List the applications of Computer Networks?	**3**	**2**	**8**
		OR			
2	a)	What is OSI Model? Explain the functions and services of each layer?	**2**	**1**	**12**
	b)	Elaborate the various guided media and unguided media used in computer communication.	**3**	**2**	**8**
		UNIT - II			
3	a)	Calculate the codeword that will be transmitted using CRC if the data to be transmitted is 1011001 and the Generator Polynomial is: x^3+x+1, which in binary is 1011. The receiver receives the codeword 1011001001. Determine if the receiver has received the data with or without error. Indicate all the steps.	**2**	**1**	**10**
	b)	Define flow control. Explain Go-Back-N ARQ with suitable example. How is it different from Stop-and-Wait ARQ?	**3**	**2**	**10**
		OR			
4	a)	Explain sliding window protocol for flow control at data link layer with suitable example. Indicate the various types of sliding window protocols.	**3**	**2**	**10**
	b)	A code scheme has a Hamming distance $d_{min} = 4$. What is the error detection and correction capability of this scheme?	**2**	**1**	**3**
	c)	Explain the frame structure of point to point to protocol (PPP) with example.	**3**	**2**	**7**

			UNIT – III			
	5	a)	Differentiate between Pure and Slotted ALOHA. A slotted ALOHA Network transmits 200 bits frames on a shared channel of 200kbps.What is the throughput if the system (all stations together) produces 1000 frames per second.	**3**	**2**	**8**
		b)	Compare TDMA and FDMA with relevant diagrams.	**3**	**2**	**6**
		c)	Explain with neat diagrams how Polling and token passing methods help in controlling the transmission by stations in a network.	**3**	**2**	**6**
			OR			
	6	a)	A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the requirement to make this frame collision-free?	**2**	**1**	**4**
		b)	Explain the various persistence methods in CSMA.	**3**	**2**	**8**
		c)	Identify the type of the following destination addresses (unicast, multicast or broadcast). Also give the reason for this identification. i. 4A:30:10:21:1O:1A ii. 47:20:1B:2E:08:EE iii FF:FF:FF:FF:FF:FF	**2**	**1**	**6**
			UNIT - IV			
	7	a)	Compare IPV6 and IPV4.	**3**	**2**	**8**
		b)	In an organization, a block of addresses 16.0.0.0/8 is granted. The administrator wants to create 500 fixed length subnets. 1) Find the subnet mask 2) Find the number of addresses in each subnet 3) Find the first and last address of subnet 1 4) Find the first and last address of subnet 500.	**2**	**1**	**12**
			OR			
	8	a)	Compare RARP and ICMP.	**3**	**2**	**6**
		b)	What is ARP? Explain function of ARP.	**3**	**2**	**6**
		c)	In a block of addresses, we know the IP address of one host is 25.34.12.56/16. What are the first address and last address in this block?	**2**	**1**	**8**
			UNIT - V			
	9	a)	Elaborate on establishment of connection using three way hand shaking in a TCP.	**3**	**2**	**5**

		b)	Explain how the leaky bucket and token bucket algorithms can be individually applied to shape the traffic to prevent congestion in networks.	**3**	**2**	**10**
		c)	Which measurable characteristics of a network flow are most critical in understanding and addressing the issue a Quality of Service (QoS) problem within an internetwork?	**3**	**2**	**5**
			OR			
	10	a)	Compare the TCP and UDP header.	**3**	**2**	**5**
		b)	Elaborate on the various methods used by TCP to avoid congestion in a network and how does it reduce the congestion when detected?	**3**	**2**	**10**
		c)	When a network gets congested, what are the various signaling methods used by the destination to signal to the source.	**3**	**2**	**5**

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