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

Autonomous Institute Affiliated to VTU

June / July 2025 Semester End Main Examinations

Programme: B.E. **Semester: V**

Branch: Computer Science and Engineering **Duration: 3 hrs.**

Course Code: 23CS5PCCON **Max Marks: 100**

Course: Computer 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)		Identify the 5 components of a data communication system. Explain simplex, half-duplex and full-duplex, modes of communication.	*CO1*	*PO1*	**6**
	b)		Analyze as to OSI model is considered less successful in practical implementations compared to the TCP/IP model? Compare the key differences between the OSI model and the TCP/IP model in terms of structure, functionality, and real-world adoption.	*CO1*	*PO1*	**7**
	c)		Explain the concept of scrambling and describe the different techniques of scrambling in details.	*CO1*	*PO1*	**7**
			OR			
2	a)		Differentiate between circuit switched network and packet switched network with the help of a neat diagram and example.	*CO1*	*PO1*	**6**
	b)		Illustrate 2B/1Q, 8B/6T, and 4D-PAM5 with suitable diagrams.	*CO2*	*PO2*	**7**
	c)		Categorize the four basic topologies in terms of line configuration. Given ‘n’ devices in a network identify the number of links required for a mesh , ring, bus and star topologies?	*CO1*	*PO1*	**7**
			UNIT – II			
3	a)		Explain with a Flow diagram the three persistence methods used in CSMA	*CO2*	*PO2*	**7**
	b)		Given the dividend 1001 and the divisor 1011, show the generation of the CRC codeword at the sender site.	*CO2*	*PO2*	**6**
	c)		Explain the controlled-access methods used in Multiple access Protocols.	*CO2*	*PO2*	**7**

			OR			
	4	a)	A sender needs to send the four 16-bit words (A7A2)16, (CABF)16, (903A)16, and (A123)16. 1. Find the checksum at the sender site. 2. Find the checksum at the receiver site if there is no error. 3. Find the checksum at the receiver site if the second data item is changed to OxCABE. 4. Find the checksum at the receiver site if the second data item is changed to OxCABE and the third data item is changed to Ox913A.	*CO3*	*PO3*	**7**
		b)	A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces a. 1000 frames per second? b. 500 frames per second? c. 250 frames per second?	*CO3*	*PO3*	**7**
		c)	Explain with a neat flow diagram CSMA/CA the interframe space, the contention window, and acknowledgments,	*CO3*	*PO3*	**6**
			UNIT - III			
	5	a)	Discuss the transition methods from IPv4 to IPv6. Illustrate these methods with suitable diagrams.	*CO3*	*PO3*	**7**
		b)	Discuss the working of RIP Algorithm and the performance of RIP.	*CO3*	*PO3*	**7**
		c)	Analyze the three types of Autonomous Systems (ASs) based on their connection to other ASs, and show how this type of AS affect the operation of interdomain routing protocols?	*CO3*	*PO3*	**6**
			OR			
	6	a)	Discuss the following with respect to IPV6 1. IPv6 datagram 2. Fragmentation and Reassembly	*CO3*	*PO3*	**7**
		b)	Describe the format of DHCP messages, and discuss the dynamic allocation of IP address using DHCP?	*CO2*	*PO2*	**7**
		c)	Discuss the ICMPv6 different protocol messages and neighbor discovery message	*CO2*	*PO2*	**6**
			UNIT – IV			
	7	a)	Explain User Datagram and UDP Services.	*CO3*	*PO3*	**7**
		b)	The following is the content of a UDP header in hexadecimal format.CB84000D001C001C a. What is the source port number? b. What is the destination port number? c. What is the total length of the user datagram? d. What is the length of the data? e. Is the packet directed from a client to a server or vice versa? f. What is the client process?	*CO3*	*PO3*	**7**

		c)	Elaborate the following services offered by TCP to the processes at the application layer (i) TCP segments, (ii). Sending and receiving buffers.	*CO3*	*PO3*	**6**
			OR			
	8	a)	How does TCP implement flow control between the sending TCP and the receiving TCP, and why is the feedback mechanism primarily concentrated on the feedback sent from the receiving TCP to the sending TCP rather than involving the receiving process?	*CO2*	*PO2*	**7**
		b)	Illustrate with a neat diagram the TCP Connection Data transfer and Connection termination using three-way handshaking.	*CO3*	*PO3*	**7**
		c)	Illustrate how Go-Back-N Protocol different from the Selective-Repeat Protocol?	*CO3*	*PO5*	**6**
			UNIT - V			
	9	a)	Identify the different identifiers in URL and list the different types of web documents?	*CO1*	*PO1*	**7**
		b)	Analyze the data transmission in DNS for the following different types of files (i). Original document (ii). Image (iii) Referenced file.	*CO2*	*PO2*	**7**
		c)	Explain DNS message format with a neat diagram?	*CO1*	*PO1*	**6**
			OR			
	10	a)	Explain request and response messages format in HTTP.	*CO2*	*PO2*	**7**
		b)	Explain the concept of SNMP with a neat diagram and elaborate on Managers and Agents with basic ideas.	*CO2*	*PO2*	**7**
		c)	Write a note on Creating and Storing Cookies using an online inventory system.	*CO3*	*PO3*	**6**

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