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

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

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

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

Course Code: 23CS5PCCON / 20CS5PCCON **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)		Define Data Communication. Explain the five component of data communication.	*CO1*	*PO 1*	**7**
	b)		Explain the four fundamental characteristics of data communication system	*CO1*	*PO1*	**7**
	c)		Assume five devices are arranged in a mesh topology. How many cables are needed? How many ports are needed for each device? Compare with star topology.	*CO1*	*PO1*	**6**
			OR			
2	a)		What is line coding? Mention different characteristics of line coding techniques.	*CO1*	*PO1*	**7**
	b)		Explain packet switched network with an example.	*CO1*	*PO1*	**7**
	c)		In protocol layering encapsulation/decapsulation is one of the concept. With neat diagram illustrate this process in TCP/IP protocol suite.	*CO1*	*PO1*	**6**
			UNIT - II			
3	a)		Apply the concept of framing and show how bit stuffing and byte stuffing works with example.	*CO2*	*PO2*	**7**
	b)		Make use of the three strategies of CSMA/CD and show how collisions are avoided.	*CO2*	*PO2*	**7**
	c)		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.	*CO2*	*PO2*	**6**
			OR			
4	a)		Make use of the concept of CSMA and Explain three different persistence methods with flow diagram.	*CO2*	*PO2*	**7**
	b)		Explain CRC encoding and decoding with an example.	*CO2*	*PO2*	**6**
	c)		Make use of stop and wait protocol and with the help of flow diagram show its working.	*CO2*	*PO2*	**7**

			UNIT – III			
	5	a)	Give IPv4 datagram format. Mention the significance of each field.	*CO2*	*PO2*	**7**
		b)	Analyze the concept of IP addressing to explain classless Inter Domain Routing(CIDR) and illustrate Address Aggregation strategy with example.	*CO2*	*PO2*	**7**
		c)	Explain RIP- Distance vector protocol with a example	*CO2*	*PO2*	**6**
			OR			
	6	a)	An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows: a. The first group has 64 customers: each needs 256 addresses. b. The Second group has 128 customers: each needs 128 addresses. c. The third group has 128 customers: each needs 64 addresses. Distinguish and design the subblocks and find out how many addresses are still available after these allocations.	*CO2*	*PO2*	**7**
		b)	Give IPv6 header format and explain all its fields and the need for it.	*CO2*	*PO2*	**7**
		c)	Explain ICMP protocol along with its types.	*CO2*	*PO2*	**6**
			UNIT – IV			
	7	a)	Identify the need for the TCP connection management using 3 way handshaking and elaborate it.	*CO3*	*PO3*	**7**
		b)	Build TCP congestion control mechanism using slow start with an example.	*CO3*	*PO3*	**7**
		c)	Identify and explain the different header fields of TCP along with the header format	*CO3*	*PO3*	**6**
			OR			
	8	a)	Identify the differences between TCP and UDP. Discuss the services offered by TCP.	*CO3*	*PO3*	**7**
		b)	Show what will happen if the send window size is equal to 2^m rather than 2^{m-1} in Go back N.	*CO3*	*PO3*	**7**
		c)	Identify and explain any 4 services of transport layer. Explain Nagle's algorithm.	*CO3*	*PO3*	**6**
			UNIT - V			
	9	a)	Identify and explain HTTP request and response message format	*CO2*	*PO2*	**7**
		b)	Identify and explain HTTP persistent and non-persistent connections with neat diagram.	*CO2*	*PO2*	**7**
		c)	Identify the various techniques used for DNS query resolving with an example for each	*CO2*	*PO2*	**6**
			OR			
	10	a)	Discuss the DNS name space?	*CO2*	*PO2*	**7**
		b)	Make use of WWW architecture and explain with example and the various components involved.	*CO2*	*PO2*	**7**
		c)	Explain functionalities of SNMP	*CO2*	*PO2*	**6**

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