CBCS SCHEME

USN

ACHARYA INSTITUTE OF TECHNOLOGY
MBA
Library
Date
BANGALORE

BCS502

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Computer Networks

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

			M	L	C
		Module – 1			
Q.1	a.	Explain fundamental characteristics and data representation in data communication.	6	L1	CO1
	b.	Discuss types of connection and the basic topologies in networks.	6	L1	CO1
	c.	Explain packet switching and circuit switching with neat diagrams.	8	L1	CO1
		OR			
Q.2	a.	Explain the layers of TCP/IP protocol suite.	8	L2	CO2
	b.	Explain types of packet switched networks and evaluate the total delay time of both.	12	L2	CO2
		Module – 2			
Q.3	a.	Explain types of errors and Hamming distance. Find the Hamming distance between the following : i) d(000, 011) ii) d(10101, 11110).	8	L3	CO2
	b.	Describe the working of CRC encoder and decoder. Perform division with respect to the following : Data word : 1001 Divisor : 1011.	12	L3	CO2
		OR			
Q.4	a.	Explain stop-and-wait protocol with FSM.	6	L2	CO2
	b.	Explain the three types of frames in HDLC.	8	L2	CO2
	c.	Discuss controlled-access protocol using reservation method.	6	L2	CO2
		Module – 3			
Q.5	a.	Explain the services offered by network layer.	6	L2	CO2
	b.	Define address space. Differentiate between classful addressing and classless addressing.	8	L2	CO2
	c.	Explain Network Address Resolution (NAT) with a neat diagram.	6	L2	CO3

		OR			
Q.6	a.	Explain IPv6 packet format in detail.	6	L2	CO2
	b.	Discuss D-V routing highlighting the importance of distance vector.	7	L2	CO2
	c.	Describe BGP protocol in detail.	7	L2	CO4
		Module – 4			
Q.7	a.	Explain the concept of port numbers mentioning ICANN ranges.	5	L2	CO3
	b.	Explain Go-Back-N protocol.	9	L2	CO4
	c.	Explain TCP segment format with a neat diagram.	6	L3	CO3
		OR			
Q.8	a.	Discuss the connection establishment in TCP.	8	L2	CO3
	b.	Explain error control in TCP using acknowledgements.	4	L2	CO3
	c.	Discuss three algorithms for handling congestion in TCP.	8	L2	CO3
		Module – 5			
Q.9	a.	Discuss application layer paradigms with neat diagram.	5	L2	CO3
	b.	Explain the use of sockets in process-to-process communication.	7	L2	CO3
	c.	Discuss the connection types in HTTP along with formats of messages.	8	L2	CO3
		OR			
Q.10	a.	Explain POP and IMAP protocols.	8	L2	CO4
	b.	Discuss the applications of SSH protocol.	4	L2	CO4
	c.	Explain resolution in DNS.	8	L2	CO3

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