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First Semester MCA Degree Examination, Dec.2023/Jan.2024
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.

		Module – 1	M	L	C
Q.1	a.	Define Computer Networks. Explain the fundamental characteristics of data communication.	6	L1	CO1
	b.	With a neat diagram, discuss the categories of topology.	8	L1	CO1
	c.	With the help of a neat diagram, explain the different types of communication between two devices.	6	L2	CO1
		OR			
Q.2	a.	Explain the layers of ISO OSI model with a neat diagram.	10	L2	CO1
	b.	How networks are categorized? Explain LAN, WAN and MAN.	10	L2	CO1
		Module – 2			
Q.3	a.	A device sends 265 kbps over a noisless channel with a bandwidth of 20KHz. How many signal levels do we need?	4	L3	CO2
	b.	List and explain the causes of transmission impairments?	12	L2	CO2
	c.	Explain the truss bandwidth and throughput.	4	L2	CO2
		OR			
Q.4	a.	Explain sampling and Quantization of pulse code modulation?	8	L2	CO2
	b.	Discuss frequency shift keying in brief.	4	L2	CO2
	c.	For the following bit pattern 01001110, apply NRZ – L, NRZ – I, Manchester and differential Manchester encoder schemes.	8	L3	CO2
		Module – 3			
Q.5	a.	What is Multiplexing? With the help of a neat diagram? Explain frequency Division Multiplexing (FDM).	10	L2	CO3
	b.	Explain frequency Hopping Spread Spectrum (FHSS).	10	L2	CO3
		OR			
Q.6	a.	List all the characteristics of Virtual – circuit network.	5	L2	CO3
	b.	Explain in brief the three phases of a circuit switched network with a neat diagram.	9	L2	CO3
	c.	What is the role of routing table in datagram network? Explain.	6	L2	CO3

		Module – 4			
Q.7	a.	Solve CRC encoder and decoder considering the values for dataword 1001 and divisor = 1011.	8	L3	CO4
	b.	Explain simple parity check code.	6	L2	CO4
	c.	Discuss the following : i) Error Detection ii) Error correction.	6	L2	CO4
		OR			
Q.8	a.	Suppose our data is a list of five 4-bit numbers that we want to send the set of numbers (7, 11, 12, 0, 6) to a destination. Apply checksum process at the sender side and at the receiver side.	10	L3	CO4
	b.	How Cyclic codes can understand, using polynomials? Explain with proper example.	10	L2	CO4
		Module – 5			
Q.9	a.	Explain how stop and wait protocol helps in achieving flow control.	10	L2	CO4
	b.	Discuss the working of Go-Back-N Automatic Report Request protocol.	10	L2	CO4
		OR			
Q.10	a.	Explain the working of selective Report ARQ.	10	L2	CO4
	b.	Discuss the working of Point-To-Point protocol.	10	L2	CO4

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