



PRESIDENCY UNIVERSITY

BENGALURU

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Make Up Examinations – December 2025

Date: 26 – 12- 2025

Time: 9:30am – 12:30pm

School: SOCSE	Program: B.Tech – Allied CSE	
Course Code : CSE3155	Course Name : Data Communication and Computer Networks	
Semester : MK	Max Marks: 100	Weightage: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	26	26	24	24	

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x2M=20M

1.	List any 2 features of Star Topology.	2 Marks	L1	CO1
2.	Identify the relationship between period and frequency?	2 Marks	L1	CO1
3.	Name three types of transmission impairment.	2 Marks	L1	CO1
4.	Differentiate between single-bit error and burst error?	2 Marks	L2	CO2
5.	Identify the class of each address i) 11000001 10000011 00011011 11111111 ii) 252.5.15.111	2 Marks	L1	CO2
6.	Define Error and its types.	2 Marks	L1	CO2
7.	Defend why can't routing be performed at the transport layer or the data-link layer, and why is routing the responsibility of the network layer?	2 Marks	L2	CO3
8.	Identify the class of the following Classful IP Addresses and convert into Binary notation. i) 192.168.1.1 ii) 10.0.0.5	2 Marks	L1	CO3

9.	Outline the format of a UDP datagram and mention all of its fields.	2 Marks	L1	C04
10.	Identify the protocols associated with Distance Vector and Link State routing algorithms.	2 Marks	L1	C04

Part B

Answer the Questions.

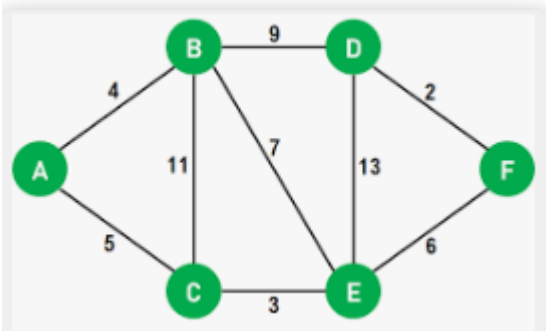
Total Marks 80M

11.	a.	Explain with a neat diagram TCP/IP model.	10 Marks	L2	C01
	b.	Explain spread spectrum and its primary goal. Discuss two spread spectrum techniques commonly used in networking to ensure effective communication.	10 Marks	L2	C01
Or					
12.	a.	You are assigned the task of setting up a communication network for a small organization. The network will use the TCP/IP Model as its communication framework. Identify and briefly describe the layers of the TCP/IP Model, highlighting the key functions of each layer in ensuring effective communication within a network.	10 Marks	L2	C01
	b.	Explain the causes of transmission impairment in detail with diagram	10 Marks	L2	C01
13.	a.	Given the dataword 110101101 and the divisor 10101, analyze the process of generating the CRC codeword at both the sender's site and the receiver's end. a) Demonstrate the steps involved in generating the CRC codeword at the sender's site using the given dataword and divisor. b) Demonstrate the steps that the receiver will perform to verify the integrity of the received data using the same divisor	10 Marks	L3	C02
	b.	Analyze the concept of CSMA/CA (Carrier Sense Multiple Access with Collision Avoidance) and give its flow diagram. Discuss the key mechanisms used in CSMA/CA to prevent collisions in wireless communication and explain their importance and impact on overall network performance.	10 Marks	L4	C02
Or					
14.	a.	A bit stream 1011001 is transmitted using the CRC method, and the generator polynomial is $x^3 + 1$. a) Demonstrate the steps to determine the actual bit string that will be transmitted using CRC encoding with the given generator polynomial. b) Suppose the fifth bit from the left is inverted during transmission. Explain how the receiver will detect this error using the CRC method and the given generator polynomial.	10 Marks	L3	C02

	b.	Analyze the concept of Multiple Access with Channelization in communication networks. Explain the different techniques of channelization used for efficient multiple access in a shared communication medium.	10 Marks	L4	C02
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15.	a.	Explain the rules for creating CIDR Block. Given the CIDR representation 20.10.30.35 / 27. Find the range of IP Addresses in the CIDR block.	10 Marks	L2	C03
	b.	A block of addresses is allocated to an organization starting with the address 197.158.2.0. The organization is divided into 4 subnets. Determine the class of the address, and calculate the starting address, last address, and total number of addresses for each subnet.	10 Marks	L3	C03

Or

16.	a.	Explain the need for transitioning from IPv4 to IPv6 and discuss the challenges involved. Describe three transition techniques that can be used to ensure a smooth migration while maintaining network connectivity.	10 Marks	L2	C03
	b.	Given the following network graph, apply the Link State Routing Protocol to determine the shortest path from Node A to all other nodes in the network. Explain the steps involved in building the Link State Routes and calculating the shortest paths using Dijkstra's algorithm. 	10 Marks	L3	C03

17.	a.	Draw the format of a TCP segment with its key fields. Discuss the role of all fields in the TCP segment header and explain how each contributes to ensuring reliable communication.	10 Marks	L2	C04
	b.	Illustrate the concept of Go-Back-N ARQ and its primary purpose in ensuring reliable data communication. Describe how Go-Back-N ARQ operates with an example, demonstrating how it handles packet loss or errors during transmission.	10 Marks	L3	C04

Or

18.	a.	Explain DNS and HTTP in detail with appropriate diagrams.	10 Marks	L2	C04
	b.	Demonstrate the concept of Selective Repeat ARQ and explain its role in achieving reliable data communication. Provide an example to illustrate how Selective Repeat ARQ manages errors and ensures the correct delivery of packets during transmission.	10 Marks	L3	C04