

**BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT**

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code 

<b>2</b>	<b>1</b>	<b>E</b>	<b>C</b>	<b>7</b>	<b>2</b>
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Seventh Semester B.E. Degree Examinations, February 2025

**COMPUTER COMMUNICATION NETWORKS**

Duration: 3 hrs

Max. Marks: 100

**Note:** 1. Answer any FIVE full questions, choosing ONE full question from each module.  
 2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO:PI)</u>
<b><u>Module-1</u></b>			
1.	a. Define physical topology. With a neat diagram, outline the various types of physical topologies used in computer networks.	10	(3 : 1 : 2.1.3)
	b. Outline the functions of each layer in TCP/IP protocol suite.	10	(3 : 1 : 2.1.3)
<b>(OR)</b>			
2.	a. What is data communication? Identify and outline the components of a data communication system.	10	(3 : 1 : 2.1.3)
	b. Outline the different data flow techniques used for communication between two devices.	10	(3 : 1 : 2.1.3)
<b><u>Module-2</u></b>			
3.	a. Outline the services provided at data link layer.	10	(3 : 2 : 2.1.3)
	b. With a neat FSM diagram, outline the operation of the Stop-and-Wait protocol and explain the importance of sequence and acknowledgment numbers in preventing frame duplication.	10	(3 : 2 : 2.1.3)
<b>(OR)</b>			
4.	a. Explain the need for ARP, outline its operation, and describe the ARP packet format with relevant diagrams.	10	(3 : 2 : 2.1.3)
	b. With a neat flow diagram, outline the operation of the CSMA/CA protocol.	10	(3 : 2 : 2.1.3)
<b><u>Module-3</u></b>			
5.	a. With neat diagrams, differentiate between the datagram approach and the virtual circuit approach in packet switching.	10	(3 : 3 : 2.1.3)
	b. Outline the structure of the IPv4 datagram format and describe the function of each field.	10	(3 : 3 : 2.1.3)
<b>(OR)</b>			
6.	a. With an example, outline the distance vector routing algorithm and explain its operation.	10	(3 : 3 : 2.1.3)
	b. Identify and describe different forwarding techniques used to forward the packets from source to destination.	10	(3 : 3 : 2.1.3)

**Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI- Performance Indicator)**

#### **Module-4**

7. a. With clear illustrations, analyze and explain the differences between connectionless and connection-oriented protocols in the transport layer. **10** (3 :4 : 3.1.5)
- b. Identify and summarize the services provided by UDP, including a diagram of the pseudo header used for checksum calculation. **10** (3 :4 : 3.1.5)

**(OR)**

8. a. With a detailed diagram and a Finite State Machine (FSM), outline the concept of Selective Repeat (SR) protocol in the transport layer. **10** (3 :4 : 3.1.5)
- b. With an example, outline the steps involved in the process of TCP connection termination using the three-way handshake. **10** (3 :4 : 3.1.5)

#### **Module-5**

9. a. Describe the architecture of email systems with a clear and detailed sketch, highlighting the key components involved in the process. **10** (3 :5 : 2.1.3)
- b. With a clear diagram, explain the concept of local and remote logging in TELNET, and describe the processes involved in each type of connection. **10** (3 :5 : 2.1.3)

**(OR)**

10. a. Outline the two types of connections in File Transfer Protocol (FTP), and explain their significance in data transmission. **10** (3 :5 : 2.1.3)
- b. Outline and explain the three transfer phases involved in the process of email delivery, providing details on each phase's function. **10** (3 :5 : 2.1.3)

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