



Program	BACHELOR OF VOCATION (B.Voc.)	Semester - 4
Type of Course	-	
Prerequisite		
Rationale	-	
Effective From A.Y.	2025-26	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				SEE T	IAT	SEE P	CCE	
3	1	0	4	50	-	-	20	70

SEE - Semester End Examination, IAT - Internal Assessment Test, CCE - Continues & Comprehensive Evaluation

Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
1	Introduction to Computer Networks Definition and advantages of computer networks, Types of networks: LAN, MAN, WAN, PAN, Network topologies: Bus, Star, Ring, Mesh, Hybrid, Network models: OSI Reference Model – Layers & functions, TCP/IP Model – Layers & comparison with OSI, Transmission modes (Simplex, Half Duplex, Full Duplex), Applications of computer networks	9	20
2	Physical Layer and Data Transmission Data and signals: Analog & digital, Transmission impairments: Noise, Attenuation, Distortion, Multiplexing: FDM, TDM, WDM, Switching techniques: Circuit, Packet, Message switching, Error detection & correction: Parity, CRC, Hamming code	9	20
3	Data Link Layer Framing, Flow control: Stop-and-Wait, Sliding Window, Error control mechanisms, MAC protocols: CSMA, CSMA/CD LAN Technologies: Ethernet (fast, gigabit), Switching & bridging: Bridges, Switches	9	20
4	Network Layer IPv4 & IPv6 addressing, Subnetting & Supernetting, Routing concepts, Routing algorithms: Distance vector, Link state, Routing protocols: RIP, OSPF, BGP, Congestion control basics, ICMP, ARP	9	20
5	Transport Layer and Application Layer TCP & UDP comparison, Connection establishment (3-way handshake), Flow & congestion control techniques, DNS, FTP, SMTP, HTTP/HTTPS, Email architecture	9	20
Total		45	100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy			
Level	Remembrance	Understanding	Application
Weightage	20	20	10

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Course Outcomes**

At the end of this course, students will be able to:

C01	Explain the basics of computer networks and reference models
C02	Understand transmission media, signals, and physical layer functions
C03	Apply data link layer concepts like framing, MAC protocols, and LAN technologies
C04	Explain IP addressing, subnetting, and routing techniques
C05	Understand transport/application layer protocols and basic network security

Reference Books

1.	Computer Networks By Andrew S. Tanenbaum & David J. Wetherall Pearson
2.	Data communications and networking By Behrouz Forouzan McGraw Hill
3.	Computer Networking: A Top-Down Approach By James F. Kurose & Keith W. Ross Pearson
4.	Computer Networks: A Systems Approach By Larry Peterson & Bruce Davie Morgan Kaufmann
5.	Data Communications and Computer Networks By Prakash C. Gupta PHI
6.	Network+ Guide to Managing and Troubleshooting Networks By Michael Meyers McGraw-Hill