Unit-1: Data Communication Fundamentals **[8 Hrs]**

Overview of Data Communications, Fundamentals of Network, Network Topologies, Services, Standardization, Reference Models: OSI Model, TCP/IP Model.

Physical Layer: Analog and Digital Signals, Data Rate Limits, Transmission Impairment, More about signals. Digital Transmission: Line coding, Sampling, Transmission modes.

Unit-2: Modulation and Switching Techniques **[8 Hrs]**

Analog Transmission: Modulation of Digital Data, Modulation of Analog signals. Multiplexing: FDM, WDM, TDM, Transmission Media: Guided Media, Unguided Media, Circuit Switching and Packet Switching.

Unit-3: Data Link Layer **[8 Hrs]**

Error Detection and Correction: Types of Errors, Detection, Error Correction.

Data Link Control and Protocols: Flow and Error Control, Stop-and-wait ARQ, Go-Back-N ARQ, Selective Repeat ARQ, HDLC, PPP.

Multiple Accesses: Random Access, Controlled Access, Channelization. Local area Network: Standard Ethernet, Wireless LANs: IEEE 802.11.

Unit-4: Network and Transport Layer: **[6 Hrs]**

Host to Host Delivery: Internetworking, Addressing and Routing, Network Layer Protocols: ARP, IPV4, ICMP, IPV6,

Transport Layer: Process to Process Delivery: UDP, TCP, Congestion Control. Routing Protocols: AODV, DSDV, DSR.

Unit-5: Application Layer: **[6 Hrs]**

Client Server Model, Socket Interface, Domain Name System (DNS): Electronic Mail (SMTP), File Transfer (FTP), POP, Remote Logging, HTTP and WWW.