Unit 1:

Data Communication, Networking Fundamentals, Physical Layer, Communication Model: Source, Transmitter, Transmission System, Receiver, Destination, Data Terminal Equipment (DTE), Data Communication Equipment (DCE), Transmission Configurations: Point-to-Point, Multipoint, Transmission Modes: Synchronous, Asynchronous, Transmission Methods: Serial, Parallel, Communication Modes: Simplex, Half Duplex, Full Duplex, Line Coding: Unipolar NRZ, Polar NRZ, NRZ Inverted, Bipolar Encoding, Manchester Encoding, DiAerential Manchester Encoding, Modulation: Amplitude, Frequency, Phase, Pulse Modulation Techniques: PCM, PAM, PWM, PPM, Digital Modulation: ASK, FSK, MSK, GMSK, PSK, BPSK, QAM, CPM, OFDM, Networking Fundamentals: LAN, MAN, WAN, PAN, Internet, Intranet, Network Architectures: Client-Server, Peer-to-Peer, Network Architecture Modes: Infrastructure, Ad-hoc, Network Topologies: Mesh, Star, Hierarchical, Reference Models: OSI, TCP/IP, Transmission Mediums: Air, Water, Vacuum, Coaxial, Cat5, Cat5e, Cat6, Cat6a, Cat7, Cat8, OFC, Networking Devices: NIC, Repeater, Bridge, Switch, Modem, Router, Gateways, Access Point.

Unit 2:

Logical Link Control, Design Issues: Services to Network Layer, Framing, Error Control: Parity Bits, Hamming Codes, CRC, Flow Control Protocols: Unrestricted Simplex, Stop-and-Wait, Sliding Window Protocol, WAN Connectivity: PPP, HDLC, PPPoE, PPPoA.

Unit 3:

Medium Access Control, Channel Allocation: Static, Dynamic, Multiple Access Protocols: Pure ALOHA, Slotted ALOHA, CSMA, WDMA, Legacy Standard: IEEE 802.3, Wiring Schemes, Frame Formats, CSMA/CD, Binary Exponential Back-oA Algorithm, High-Speed Ethernet Standards: Fast, Gigabit, 10Gigabit, Wireless Standards: IEEE 802.11a/b/g/n/ac, IEEE 802.15, IEEE 802.15.4, IEEE 802.16, CSMA/CA.

Unit 4:

Network Layer, Switching Techniques: Circuit, Message, Packet Switching, Logical Addressing: IPv4, IPv6, Subnetting, NAT, CIDR, Network Layer Protocols: IP, ICMP, Routing Protocols: Distance Vector, Link State, Path Vector, Routing in Internet: RIP, OSPF, BGP, Congestion Control, QoS, MPLS, Mobile IP, Routing in MANET: AODV, DSR.

Unit 5:

Transport Layer, Services: Berkeley Sockets, Addressing, Connection Establishment, Connection Release, Flow Control, BuAering, Multiplexing, Protocols: TCP, UDP, TCP Timer Management, Quality of Service: TCP Congestion Control, TraAic Shaping: AIMD, QUIC Protocol, Real-Time Support Protocols: RTP, SCTP, DiAerentiated Services, TCP and UDP for Wireless.

Unit 6:

Application Layer, Address Resolution: DNS, WWW: HTTP, HTTPS, Web Service, Email: SMTP, MIME, POP3, Webmail, File Transfer: FTP, Dynamic Addressing: DHCP, Custom Packet Generation, Design and Development of Scalable Enterprise Application Layer, Address Resolution: DNS, WWW: HTTP, HTTPS, Web Service, Email: SMTP, MIME, POP3, Webmail, File Transfer: FTP, Dynamic Addressing: DHCP, Custom Packet Generation, Design and Development of Scalable Enterprise