

**JYOTI NIVAS COLLEGE AUTONOMOUS  
SYLLABUS FOR 2018 BATCH AND THEREAFTER**

**Programme: B.C.A**

**Semester: IV**

**DATA COMMUNICATIONS AND COMPUTER NETWORKING**

**Course Code: 18BCAIVT3**

**No. of Hours: 60**

**COURSE OBJECTIVES:**

- Study the basic taxonomy and terminology of the computer networking and enumerate the layers of OSI model and transmission of digital media
- Study data link layer concepts, design issues, and protocols and Local Area Networks
- Study the concepts of switching and ISDN and Acquire knowledge of Application layer, Presentation layer and Session Layer paradigms and protocols.

**LEARNING OUTCOMES:**

- Describe the functions of each layer in ISO/OSI model.
- Describe the functions of data link layer and explain the protocols and Explain the types of transmission media with real time applications.
- Explain the functions of Application layer, Presentation layer and session layer paradigms and Protocols.

**UNIT - I**

**09 HRS**

**Introduction:** Data Communication: components – Networks: distributed processing, network criteria – Protocols and Standards.

**Basic Concepts:** Line Configuration – Topology: Mesh, Star, Tree, Bus, Ring – Transmission Mode – Categories of Networks: LAN, MAN, WAN– Internetworks.

The **OSI Model:** The Model – Functions of the Layers.

**UNIT- II**

**12 HRS**

**Transmission of Digital Data:** Digital data transmission: Parallel, Serial – DTE-DCE interface: EIA 232 interface: mechanical, electrical and Functional Specification, Null modem – MODEMS. Transmission media: Guided media: twisted pair cable, coaxial cable and fiber optic cable: propagation modes – Unguided media: propagation of radio waves, terrestrial microwave, satellite communication, cellular telephony – Transmission impairment: attenuation, distortion, noise – performance: throughput, propagation speed, propagation time.

**UNIT - III**

**12 HRS**

**Data Link Control:** Line Discipline: ENQ/ ACK, Poll/Select - Flow Control: Stop- and- wait, Sliding Window – Error Control: Stop and wait ARQ, Sliding Window ARQ: Go-back-n and Selective reject.

**Local Area Networks:** Ethernet: 10BASE5, 10BASE2, 10BASE-T, IBASE5, Other Ethernet networks –Token Bus – Token Ring - FDDI.

#### **UNIT -IV**

**15 HRS**

**Switching:** Circuit Switching: Space division switching, Time division switches – Packet Switching: datagram approach, Virtual Circuit approach – Message Switching.

**Integrated Services Digital Network:** B, D, and H channels, User Interfaces, Functional Grouping-The ISDN Layers – Broadband ISDN.

#### **UNIT - V**

**12 HRS**

**Transport Layer:** Duties of the Transport Layer: End-to end delivery, Addressing, Reliable delivery, Flow control, Multiplexing – Connection – The OSI Transport Protocol: transport classes, TPDU, Connection- oriented and connectionless services.

**Upper OSI Layers:** Session Layer: Session and Transport Interaction, Synchronization points, Session Protocol data Unit – Presentation Layer- Functions: Translation, Encryption/ Decryption, Authentication, Compression – Application Layer: MHS, FTAM, VT, DS, CMIP

#### **REFERENCES:**

1. Behrouz A. Forouzan. Data Communications and Networking. Tata McGraw-Hill Edition, Fourth Edition.
2. Andrew s. Tanenbaum .Computer Networks. Pearson Education .Fourth Edition.
3. Alberto Leon- Garcia and IndraWidjaja.Communication Networks- Fundamental Concepts and key Architectures. Tata Mcgraw-Hill. Second Edition.