



## JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

### III Year B.Tech. Computer Science Engineering. I-Sem.

#### COMPUTER NETWORKS

##### Unit-I:

**Introduction: Data Communication**, components, data representation, data flow; **Networks**: distributed processing, network criteria, physical structures, network models, categories of network, inter connection of networks; **The Internet**: brief history, internet today, **Protocols & standard layers**: protocols, standards, standard organization, internet standards, **Layered Tasks**: sender, receiver, carrier, hierarchy.

**The OSI models**: layered architecture, peer to peer process, encapsulation, **Layers in OSI model**: physical layer, data link layer, Network layer, transport layer, session layer , presentation layer , application layer , **TCP/IP protocol suite**: physical and data link layers, network layer, transport layer, application layer, **Addressing**: physical address, logical address, port address, specific address.

##### Unit-II:

**Physical layer and overview of PL Switching**: **Multiplexing**: frequency division multiplexing, wave length division multiplexing, synchronous time division multiplexing, statistical time division multiplexing, **introduction to switching**: Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

##### Unit -III:

**Framing**: fixed size framing, variable size framing, , Flow control, Error control ,**Error detections** **Error correction**: block coding, linear block codes, **cyclic codes**: cyclic redundancy check, hard ware implementation, polynomials, cyclic code analysis, advantages, **Checksum**: idea, one's complement internet check sum, services provided to Network Layer, **elementary Data link Layer protocols**- Unrestricted Simplex protocol, Simplex Stop-and-Wait Protocol, Simplex protocol for Noisy Channel.

##### Unit-IV:

**Sliding Window Protocol**: One bit, Go back N, Selective Repeat-Stop and wait protocol , data link layer **HDLC**: configuration and transfer modes, frames, control field, **point to point protocol( PPP)**: framing, transition phase, multi plexing, multi link PPP.

##### Unit -V:

**Random Access**: ALOHA, career sense multiple access (CSMA), career sense multiple access with collision detection, career sense multiple access with collision avoidance , **Controlled Access**: Reservation, Polling, Token Passing, **Channelization**: frequency division multiple access(FDMA),time division multiple access(TDMA), code division multiple access(CDMA).

### **Unit-VI:**

**IEEE Standards:** data link layer, physical layer, Manchester encoding, **Standard Ethernet:** MA C Sub Layer, physical layer, **Fast Ethernet:** MAC Sub Layer, physical layer, **IEE-802.11:** Architecture, MAC sub layer, addressing mechanism, frame structure.

### **Unit-VII:**

**Blue tooth:** Architecture, blue tooth layers, Protocol stack, Frame structure, cellular **Telephony**-frequency reuse Transmitting, receiving, roaming, **Satellite Networks** – GEO, LEO,MEO satellite.

### **Unit-VIII:**

**Data Link Layer Switching**-Bridges, Local internet working Spanning tree bridges, remote bridges, switch virtual LANs.

### **TEXT BOOKS:**

1. Data communications and networking 4<sup>th</sup> edition Behrouz A Fourzan, TMH
2. Computer networks 4<sup>th</sup> edition Andrew S Tanenbaum, Pearson
3. Computer networks, Mayank Dave, CENGAGE

### **REFERENCE BOOKS:**

- 1.[http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Kharagpur/Computer%20networks/New\\_index1.html](http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Kharagpur/Computer%20networks/New_index1.html)
- 2.Computer networks, A system Approach, 5<sup>th</sup> ed, Larry L Peterson and Bruce S Davie, Elsevier

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