Communication Networks

B.E. Sem. VII [ETRX]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical Exam	–	–
Oral Exam	–	25
Term Work	–	25

SYLLABUS

1. **Introduction to Communication Networks**
   Communications Model, Data Communication Networks- Public Switched Telephone Network (PSTN), Leased Line, Local Area Networks (LAN), Public Switched Data Network (PSDN), and Integrated Services Digital Network (ISDN). Communication Architectures, Protocol Layer Concepts, OSI Layer, Standard Organizations. Transmission Media : Twisted pair, STP, UTP, Coaxial cable, Fiber Optics, Wireless, Microwave, Satellite, Radio, and Media Properties.

2. **Data Transmission and Digital Carrier Systems**
   Simplex, Half-Duplex, Full-Duplex, Serial and Parallel Transmission, Synchronous and Asynchronous Transmission, Bit Oriented Synchronous Transmission, Byte Oriented Synchronous. Modem functions, Standard V Series.

   Digital Carrier Systems
   T-carrier, Super frame, Extended Superframe, (ESF), XDSL. E-carrier, PDH, Synchonouse Digital Hierarchy, Synchronous Optical Network, concept of SONET/SDH, and Digital Multiplexing Hierarchy.

3. **Data Link Control**
   Flow Control, Framing, Sliding-Window, Error Detection, Parity Check, Cyclic Redundant Check (CRC), Error Control Techniques, Stop-and-Wait ARQ, Go-back-N ARQ, Selective-repeat ARQ. HDLC Frame Format.

4. **Switching Network**
   Switching technology, Circuit switching, Packet switching, Virtual Circuits and Datagram. Routing in Packet Networks, Network Algorithms and Shortest Path Routing, Congestion Control in Switched Data Networks.

5. **Local Area Networks and High-Speed LANs**
   LAN characteristics, Topology, Bus, Ring, Star, LAN Media, Data Link Layers, MAC Address, Logical Link Control, LAN Standard, IEEE 802.2, IEEE 802.3- CSMA/CD, CSMA/CA Ethernet architecture, IEEE 802.3 specifications, Hub, 10Base5, 10Base5, 10BaseT, 10BaseF, Concept of bridge LAN., Ethernet Frame, Binary Back off, Inter-frame Gap, Ethernet Performance, Ethernet Switching. IEEE 802.4, IEEE 802.5, Gigabit Ethernet and FDDI.

6. **Applications and Layered Architectures**
   Examples of Protocols, Services (HTTP, DNS and SMTP etc), and Layering, TCP/IP Architecture. TCP/IP Protocol, IP Addressing, The Berkeley API, Application Layer Protocols and TCP/IP Utilities.

Reference :

1. Data Computer Communications (*William Stallings*) Pearson Education.
2. Communication Networks (*A. Leon-Garcia and Indra Widjaja*) Tata McGraw-Hill Publication
3. Data communications and Networking 4th Edition (*Behrouz A Forouzan*) McGraw-Hill Publication.
4. Computer Networking (*J. F. Kurose and K. W. Ross*) Pearson Education.
5. Data Networks , 2nd Edition, (*D. Bertsekas and Gallager*) Prentice-Hall of India
6. Local Area Networks (*Gerd Keiser*) McGraw-Hill Publication.
7. Linux Lab (*Dayanand Ambawade and Deven Shah*) Wiley-Dreamtech Publication.
8. Local Area Network 4th Edition (*Behrouz A Forouzan*) McGraw-Hill Publication.
9. Networks for computer scientists and engineers (*Youlu Zheng*) OXFORD Publication.
10. Computer Networks (*Natalia olifer Victor olifer*) Wiley Publication.

❑ ❑ ❑ ❑ ❑