IT- 503 – Computer Networks

Unit I

Importance of computer networks, broadcast and point to point networks, Local area networks and Wide area networks , Introduction to ISO-OSI reference model, TCP/IP reference model , function of each layer, interfaces and services, Protocol data unit, connection oriented and connectionless services, service primitives, comparison of TCP/IP and ISO-OSI reference model, Novel Netware, Arpanet , X.25

Unit II

Data-Link layer: - Data link layer design issues, framing , flow & error control , physical addressing,Stop & Wait protocol ,Go back N ARQ ,selective repeat ARQ ,piggybacking and pipelining ,HDLC LAN Protocol stack-Logical link control and Media Access Control sublayer, IEEE 802.2 LLC Frame format Data link layer in the internet, Serial line IP and Pont to point protocol

Unit III

MAC layer Protocols- , static and dynamic allocation , Pure and slotted ALOHA protocols, Carrier sense multiple access, Persistent and non persistent CSMA, IEEE standard 802.3 and Ethernet,802.3 cabling, IEEE 802.4, IEEE 802.5, FDDI Wireless LAN , Comparison of wired and wireless LAN, WIMAX

Unit IV

The Network layer- logical addressing, classful & classless addressing , address mapping ,packet delivery & forwarding. unicast routing protocols , multicast routing protocols, Routing algorithm- Least Cost, Dijkstra's, Bellman-ford, congestion control algorithms, Internetworking devices, Introduction to Internet protocol IPv4

Unit V

Transport layer-Transport services , Process to process delivery, UDP ,TCP ,congestion control , quality of service , Integrated services, Differentiated services LAN-WAN Design and implementation-Configuring TCP/IP, using Ipconfig, ping command , study of structured LAN , study of internetworking devices and their configuration– switches, hubs, Bridges, routers and Gateways

References:-

1. "Local area networks ", Forouzan, TMH, 1st edition
2. **"**Computer Networks" - Tanenbaum ,PHI Learning.
3. Computer Networks: Protocols, Standards and Interfaces By Black, PHI learning
4. "Computer Communications & Networking Technologies"-Michael A. Gallo & William M. Hancock -Cengage pearsen publications

Suggested List of Experiment

1. Establishment and configuration of LAN
2. Colour coding standard of CAT 5,6,7 and crimping of cable in RJ-45
3. Study of WAN
4. Case study of STOP AND WAIT Protocols
5. Study of sliding window protocol 6. study of IEEE 802.3 , 802.4 ,802.5
7. Study of FDDI
8. Study of basic networking commands like ping, ipconfig, etc
9. Case study of various Routing Strategies
10. Case studies of various Network Topologies
11. Establishing & studying the various parameters of a home LAN Network
12. Study of IOS of routers
13. Configuring routers, bridges and switches and gateways