

ACADEMIC PLAN FOR 6th SEMESTER

DATA COMMUNICATION & NETWORKS

Paper Code: ETEC-310

<u>S.No</u>	<u>Topic</u>	<u>Lecture (44)</u>
UNIT I		
1	Components:Need and advantages/disadvantages of computer network Protocols and standards:Protocols,Standards,Standards Organisation, Standards creation communities. Network and Protocol Architecture:Virtual Communication between layers	2
2	Reference Model ISO-OSI: Role of different layers of the OSI Protocol stack	1
3	TCP/IP-Overview of the protocol stack, different topologies:Bus, Ring,Star,Mesh,Tree,logical and their comparisons.	1
4	Digital data transmission: Possible mode of communication: Serial and Parallel. DTE-DCE interface: EIA 232 specifications. interface standards: its comparison:232,423,422 concept of NULL modem modems: 56K modem, cable modem,DSL	2
5	Transmission mode, digital signals, digital to digital encoding	1
6	Transmission media- guided :Twisted pair, coaxial cable, fiber optic cable.unguided: Wireless media. transmission impairment: Attenuation,Delay Distortion, Noise Performance, wavelength and Shannon capacity	1
7	Error Detection and Correction codes: Parity Detection(LRC,VRC) Hamming Codes, cyclic Redundancy Check.	2
8	Circuit switching (space-division, time division and space-time division), packet switching (virtual circuit and Datagram approach), message switching. Comparison of message,Circuit and Packet switching	1
UNIT II		
9	Data Link Layer, Design issues: functions of Data Link layer,Services provided by Data Link layer to network layer.	1
10	Data Link Control and Protocols: Flow and Error Control. Framing : Methods and character count. Unrestricted simplex protocol,Simplex stop and wait protocol, Simplex protocol for noisy channel,piggybacking	1
11	Stop-and-wait ARQ	1
12	Sliding window protocol, Go-Back-N ARQ, Selective Repeat ARQ	1
13	HDLC, Point-to -Point Access: PPP Point -to- Point Protocol, PPP Stack: LCP and NCP	2
14	Medium Access Sub layer: MAC and LLC sublayers, Channel allocation problem:static and dynamic. Controlled Access: Reservation ,polling, token passing, logical ring	1
15	Channelization:FDMA,TDMA,CDMA multiple access protocols	1
16	IEEE standard 802.3:U and G 802.11 for LANS and WLAN: Architecture, MAC layer: Point coordination,PCF and DFC, hidden station problem.	2
17	Token ring, Token Bus, FDDI based LAN, Network Devices-repeaters,	1

	hubs, switches bridges.	
	SECOND TERM	
	UNIT III	
19	Network Layer: Design issues, Position and duties of network layer.	1
20	Routing algorithms: Static, Dynamic and Hierarchical Routing. Broadcast and Multicast Routing.	2
21	Congestion control algorithms : Need for congestion control algorithms, causes of congestion, Flow control	1
22	Host to Host Delivery: Internetworking, addressing and routing: Tunneling and Virtual circuits concept, ARP, RARP	1
23	IP addressing (class full & Classless)	2
24	Subnet, Supernet	1
25	Network Layer Protocols: ARP, IPV4, ICMP, RIP, OSPF, BGP, IGMP	2
26	IPV6 and ICMPV6	1
	UNIT IV	
27	Transport Layer: Process to Process Delivery, QOS	1
28	UDP : Protocol, Header structure	1
29	TCP : Protocol, Header structure	1
30	Congestion Control and Quality of Service	2
31	Application Layer: Client Server Model	1
32	Socket Interface : Socket types , Berkeley Sockets	1
33	Domain Name System (DNS)	1
34	Electronic Mail (SMTP)	1
35	File transfer (FTP)	1
36	HTTP and WWW	1

Text Books:

- [T1] A. S. Tannenbum, D. Wetherall, "Computer Networks", Prentice Hall, Pearson, 5th Ed
[T2] Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, 4th Ed

Reference Books:

- [R1] Fred Halsall, "Computer Networks", Addison – Wesley Pub. Co. 1996.
[R2] Larry L, Peterson and Bruce S. Davie, "Computer Networks: A system Approach", Elsevier, 4th Ed
[R3] Tomasi, "Introduction To Data Communications & Networking", Pearson 7th impression 2011
[R4] William Stallings, "Data and Computer Communications", Prentice Hall, Imprint of Pearson, 9th Ed.
[R5] Zheng , "Network for Computer Scientists & Engineers", Oxford University Press
[R6] Data Communications and Networking: White, Cengage Learning