COMPUTER NETWORKS – ESE DETAILED SYLLABUS

UNIT 1 DATA LINK LAYER

Introduction to Computer Networks and Internet [Devices, Network Components etc.], Layered Architecture (OSI and TCP/IP) [Functionality of Each Layer, Comparison etc.]. Framing [Fixed Framing, Variable size framing, Bit Stuffing and Byte Stuffing], Error Control [Error Detection and Correction, CRC, Checksum, Hamming Code] Media access protocols [ALOHA (Pure Aloha and Slotted Aloha), CSMA-CD, Binary Exponential Back off Algorithm], Ethernet 802.3 [Introduction, Frame Format, Efficiency etc.], Token ring 802.5 [Introduction, Frame Format, Efficiency, Ring Latency, Issues and their solutions etc.], Reliability Issue: sliding window [Stop and Wait, Go Back-N, Selective Repeat, Piggybacking, Efficiency]

UNIT 2 NETWORK LAYER

Internetworking and Routing: Best effort Service [QoS, Network Delay etc.], Switching [Circuit Switching, Datagram Switching (Packet Switching and Virtual Circuit Switching)], Virtual Circuits, IP Addressing [IP Address Classes, Classless Addressing, Special IP Address, Private IP Address, Sub netting (Fixed and variable)], IPv4 header, Datagram Fragmentation, Routing Issue, Distance Vector (RIP) and Link State Routing (OSPF), BGP.

UNIT 3 TRANSPORT LAYER

End to end delivery issues (Introduction of TCP and UDP, Sockets, Applications, Three-way handshaking, TCP header, UDP Header), Reliable data transfer, Congestion control [Slow Start-Exponential Increase, Congestion Avoidance-Additive Increase, Congestion Detection-Multiplicative Decrease], Quality of Service.

UNIT 4 APPLICATION LAYER

DNS [Architecture, Hierarchy, Name Space Distribution etc.], FTP, HTTP [WWW, Web Document, HTTP Transaction], SMTP [Electronic Mail Architecture], Socket Programming.

Note: Please solve numerical problems in the classes for those topics wherever it is applicable.