## **Final Exam Study Guide**

Suggestions on how to study: review the course Lectures & related Notes and other materials covered in class and similar material in the text. Review your homework submissions and midterms. The Final Exam will cover all Lectures through 6B, with very few questions from Lecture 6B and very few questions from the Prob-Que-Notes covered in class. Some specific points to be sure to cover:

- Understand Circuit Switching, Message Switching and Packet Switching
- TCP/IP Reference Model and Encapsulation and Decapsulation
- Classical LAN Example and how frames / packets get from one machine to another machine
- Delays in the network: propagation time, transmission time, queuing time
- Shannon Capacity Theorem and Nyquist Sampling Rate Theorem
- Error Correction and Detection: Hamming block codes and polynomial codes
- Link layer protocols (Lecture 3) through page on synchronization bit stuffing
- Multiaccess control protocols (Lecture 4A) and algorithms all pages.
- Local area networks (in Lecture 4B): Ethernet including logical formats, transmission algorithm, backoff, and performance
- LAN bridges
- Wireless LANs basic transmission / reception, hidden terminal, exposed terminal, MACA and CSMA/CA protocols.
- Network and Transport Layer protocols, IP addresses Class Structure, subnetting, CIDR, supernetting, IP protocol, UDP, TCP, ARP, RARP.
- Shortest Path Routing Algorithms: Dijkstra, Bellman Ford Moore, Distributed BFM
- Forwarding Decisions, Routing Tables, RIP, OSPF, BGP.
- ICP / TCP protocol connection management including start / finish, flow and congestion control, and related algorithms and features.
- DNS: Name servers, queries, record information.
- HTTP basics and cookies.
- Basic (discrete ) Probability Theory