

Department of Electrical Engineering, IIT Madras

ESB-243, B-Slot

July-Dec. 2008

EC-305 : Communication Systems

Part-1: From “*Digital Telephony*”, J.C.Bellamy, 3rd Ed (John Wiley)

1.1 Chapter 1 – Introduction: reading

1.2 Chapter 2 – Why digital? reading

1.3 Chapter 3 – Voice digitization (all topics; from 3.7 onwards for reading) – uniform and non-uniform quantization (Lloyd-Max quantizer), PCM, ADPCM, DM

1.4 Chapter 4 – Digital transmission (including a first look at pulse-shaping, matched filtering and finding probability of symbol error) & Multiplexing

1.5 Chapter 12 – Traffic analysis 12.1 and 12.2 (Arrival statistics, Erlang-B formula)

1.6 Chapter 5 – Digital switching: 5.1, 5.2, 5.3 (excluding 5.2.3 to 5.2.6), 5.3, & 5.4

Part-2: From “*Wireless Communications*”, T.S.Rappaport, 2nd Ed (Pearson)

2.1 Chapter 1 – Introduction to wireless communications: reading

2.2 Chapter 2 – Modern wireless communications

(**) Path Loss, Receiver Sensitivity, Wireless Communication Link Budget (Notes)

2.3 Chapter 3 – Cellular concept – System design fundamentals (emphasis on co-channel interference and system capacity, and trunking efficiency)

2.4 Chapter 9 – Multiple access techniques for wireless communications

Part-3: Other Topics

3.1 Error Detection (matrix parity check code) – class notes

3.2 ARQ Protocols – from “*Data Networks*”, Bertsekas & Gallager (chapters 1 and 2.1)

3.3 Analog Communications – from Chapter 3, “*Principles of Comm.*”, Ziemer & Tranter

Assessment Method:

Quiz1 – 20; Quiz2 – 20; End Sem – 40; The remaining 20 marks will be awarded to assignments and/or “short quizzes” for 10-15mins duration.

Soft-copies of additional material will be made available at www.ee.iitm.ac.in/~giri.