Table of Contents for Chapter 3 "Sampled Signals" 3.15.03

Definitions of T_1, Δt, ω_1 and t_n. 1

20. Sampled signals and their **Image Spectra**. 1
    Figure 20.1: non-overlapping image spectra 2
    Figure 20.2: overlapping image spectra 3

21. **Digital filters** and their Image Spectra. 3
22. The **Digital Fourier Transform** X'(ω) . 6
23. Relation between X'(ω) and X(ω). 7
    Digital Fourier Transform Summary Box 10

24. The **Z Transform**. 11
    (a) convolution 12
    (b) unit impulse 12
    (c) time translation : D flip-flops and z^{-1} 12
    (d)derivative limit 13
    (e) digital RC filter, impulse response 13
    (f) poles imply feedback
        Figures showing sample FIR and IIR filters. 14
    (g) scramblers
    Z Transform Summary Box 16

25. Amplitude Modulated **Pulse Trains**. 16
    Pulse Train summary box 17

26. A simple application: **aperture correction**. 18
    Figure 26.1: aperture illustration t 18
    Figure 26.1: aperture illustration ω 19

27. The **Discrete Fourier Transform** (DFT) 19
    Discrete Fourier Transform Summary Box 23
    Figure 27.1: The pulse Pulse(t) 24
    Figure 27.2: resulting pulse train 24
    Figure 27.3: sampled pulse 25
    Figure 27.2: sampled pulse train 25

28. Alternate Form of the DFT. 27
29. **Symmetry relation** for the DFT coefficients 28
30. **Parseval's Theorem** for the DFT 28
31. **Example** of a DFT using Maple 29
32. The **FFT** 31
33. **Lee & Messerschmitt** Notation 31
34. The **Nyquist Sampling Theorem** 33
        box(t) as sinc function 33