Department of Electrical & Computer Engineering
University of California, Santa Barbara

ECE 235
Fall 2010
Shynk
H.O. #16

HOMEWORK #6

Due Monday, November 22, 2010 (5:00 p.m.)

Reading: Chapter 8

Problems:

1. Problem 7.5
2. Problem 7.18
3. Problem 7.20
4. Problem 7.29
5. Problem 7.33
6. Let $V[n]$ be a Bernoulli random sequence such that $P(V(n) = +1) = p$ and $P(V(n) = -1) = 1 - p$ with $0 < p < 1$. Define the random sequence

$$X[n] = \begin{cases} \sum_{k=1}^{n} \alpha^{n-k} V[k], & n > 0 \\ 0, & n \leq 0 \end{cases} \tag{1}$$

   where $|\alpha| < 1$. Use the Doob-Meyer decomposition to find the predictable part $Y[n]$ and the Martingale sequence $U[n]$ of $X[n]$.