

ENEL 563 Biomedical Signal Analysis

Fall 2008

Assignment 5

1. Give a mathematical expression to compute the autocorrelation function (ACF) of a single observation of a discrete-time signal $x(n)$.

Give a mathematical expression to obtain the power spectral density (PSD) of the signal from the ACF.

Explain how you could use the PSD of an EEG signal to detect the presence of

- (i) the alpha rhythm;
- (ii) the beta rhythm;
- (iii) the theta rhythm; and
- (iv) the delta rhythm.

(5 marks)

2. Propose a method to detect spike-and-wave complexes in an EEG signal.

Give at least one equation and explain your approach.

Give a step-by-step algorithm to implement your procedure.

(5 marks)

Total marks: 10.

Due date: 4:00 PM, Friday, 28 November, 2008, in the box for ENEL 563, 2nd floor, ICT building.