EEE 317 Tutorial questions – PN sequences and S.S. systems

1) Using the handout, sketch a PN code generator using 4 shift registers.
2) What is special about Barker codes? What applications are Barker codes especially appropriate for?
3) Sketch a DSSS receiver system.
4) State the processing gain for a FHSS and DSSS system.
5) What defines a Fast FHSS system?
6) Why are SS systems often used in timing applications?
7) Sketch the autocorrelation function of the sequence '110'. Would this code be useful for synchronisation applications?
8) Sketch the frequency spectrum of an unmodulated binary signal of period 100ms, before and after spreading in a DSSS system with G = 100. The peak spectral component of the original message is A.
9) How does the spectrum of real noise and pseudo noise differ?
10) Describe why the code given in question 7 is a poor PN code.