Q 1(A)   What do you know about random filter? Explain minimum delay property.

Q 1 (B)   Explain minimum phase, minimum phase signal, and minimum phase filter.

Q 1(C)   Explain first order Markov process-parameter Identification

Q.2 (a)   Wiener filter can be used as Kalman filter. Explain how?

Q 2(b)   Briefly describe Auto representative model levenson recursion.

Q 2(c)   Explain linear estimation of stationary signals

Q 3(A)   Explain analysis and synthesis of lattice filters

Q3 (b)   How spiking filter is used in deconvolution problem?

Q 3(c)   Describe estimation of a systems?

Q4 (a)   Explain Maximum likelihood method

Q4(b)   What is spatial smoothing? How this is used for mutually coherent signals?

Q4(c)   Discuss spectral analysis of sinusoids in noise.

Q.5(A)   For the Weiner filtering problem shown below
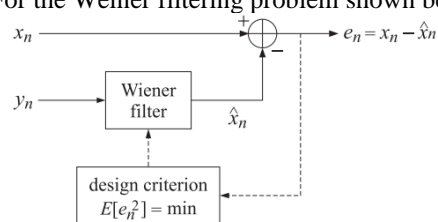
In general, an infinite number of weights is required to achieve the lowest estimation error. Explain the solution to overcome this problem.

Q.5(B)   A straightforward generalization of the correlation canceler loop is the adaptive linear combiner. What are the applications of adaptive linear combiner? Explain application of adaptive linear combiner in Adaptive FIR Wiener filter.

Q.5(C)   Channels used in digital data transmissions can be modeled very often by linear time invariant systems. Typically, a channel equalizer will be a FIR filter with enough taps to approximate the inverse transfer function of the channel. Explain channel equalizer which optimizes itself adaptively.