

Final

**EE5111: Estimation Theory**

**Spring 2020**

## Final Exam

*Lecturer: Sheetal Kalyani*

*Full Marks: 10*

### Problem 1

You own a construction company which specializes in residential buildings, i.e., large apartments, medium size apartments, bungalows etc. You have to decide at the start the year what your current focus will be for the next six months, i.e. what projects you will undertake based on various factors such as profits in the last year in the various type of projects you undertook, market sentiment, the labour cost and housing available, price of raw materials, the external funding you will be able to get for these projects, buyer sentiment, current liquidity you have etc.

Think like a Bayesian and assume priors for all these factors and then come up with a plan on how many units you will think of building and the type of housing you will think of building. Whenever you have a doubt about the way forward make logical assumptions, state them and proceed forward. You can add more factors as long as you can justify them.

Now suddenly there is an unexpected shutdown, people are going to lose jobs, labour may not be available, there are multiple restrictions on a number of people you can employ in one project simultaneously, banks are wary of lending to both buyer and seller. Is all your prior knowledge based on which you came up with a plan now not useful? What will you do now to try to salvage the situation? What about the half completed projects? What will be your strategy now?

Feel free to use online resources and then come up with a solution. I cannot prevent you from discussing this with your friends but I would prefer that the final report reflects your understanding of the problem and is in your words. Finally what is the key take away you learnt from this problem and its solution?