**Solution Sheet**

1. Which model have you used for probability prediction? Explain your model.

I have used **Random Forest Regressor** for predicting the probability. A Random Forest is an ensemble technique capable of performing both regression and classification tasks with the use of multiple decision trees and a technique called Bootstrap Aggregation, commonly known as bagging. The basic idea behind this is to combine multiple decision trees in determining the final output rather than relying on individual decision trees.

My model had minimum MSE at maxDepth = 5 and

No of decision tree = 35.

1. Which model have you used for Diuresis Time series prediction? Explain your model.

I used **Vector auto-regressive (VAR)**  model for predicting the diuresis data for 27th March and using that in **Random Forest Regressor**, I’m predicting the probability value on 27th March.

**Vector auto-regressive (VAR)** integrated model comprises multiple time series and is quite a useful tool for forecasting. It can be considered an extension of the auto-regressive (AR part of ARIMA) model. VAR model involves multiple independent variables and therefore has more than one equations. Each equation uses as its explanatory variables lags of all the variables and likely a deterministic trend. Time series models for VAR are usually based on applying VAR to stationary series with first differences to original series and because of that, there is always a possibility of loss of information about the relationship among integrated series.