Name: Ram Milan Verma
Roll: 150010037
Topic: State Estimation of Induction Machine
CL653 | Report 1

1. **True State Generation**:
   The dynamics of induction machine described in project is non-linear system with number of states = 5; number of inputs = 3 (constant input); number of outputs = 2
   Wrote a MATLAB function file for dynamics named ‘imdyn.m’
   Integrated the dynamic equations of the states using ode45 of MATLAB for each sampling period and added process noise of mentioned covariance at the end.
   Stored the states at each of the sampling instants.
2. **Kalman Filter implementation**:
   a. Finding steady state:
      Used fsolve function of MATLAB to get the steady state points and crossed checked the validity of steady state by re-substituting using feval function of MATLAB.
   b. Linearisation of the system:
      Found the linearised discrete time model by first linearising about the steady state point and the discretizing.
   c. Implemented the Kalman Filter to estimate the states and plotted using subplot command of matlab. 1 subplot for each state with true and estimated states.