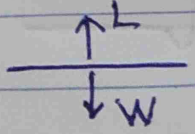
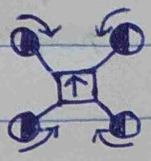
150-6-25

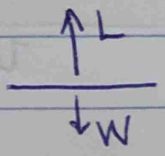
Flight Mechanics and PID

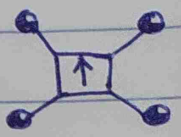
★ Hovering



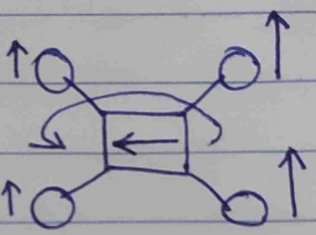


★ Ascend (or descend)

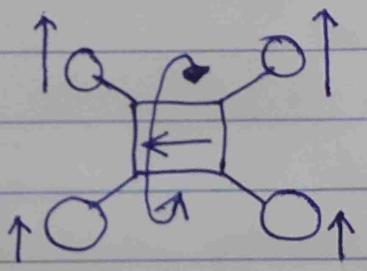




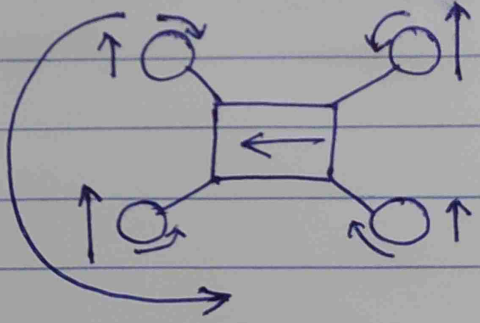
★ Pitch



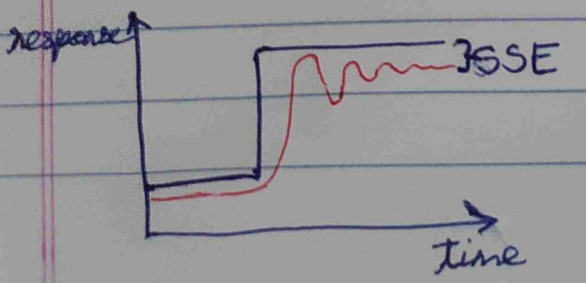
★ Roll



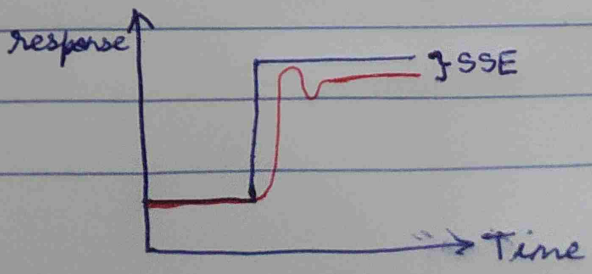
★ Yaw



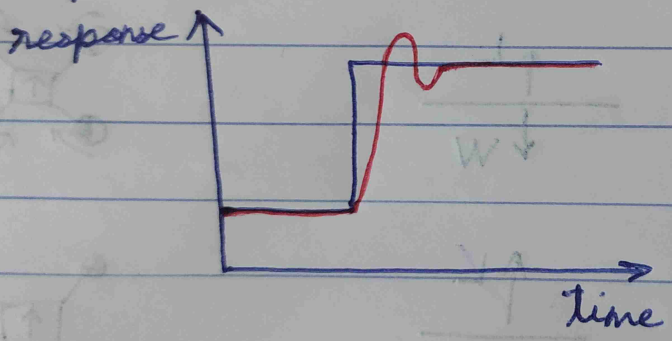
★ Proportional (P) controller
(Oscillates and Steady state error in output)



PD controller
(reduces oscillations but not SSE)



☆ Proportional Integral Derivative (PID) control



5-6-25

Motor and Battery calculations

☆ 3S LiPo battery - Series of 3 cells
Rated voltage = 3.7 X 3 = **11.1 V**

☆ A2212 1800kV BLDC motor
↓
rpm per 1V
when no load

☆ When no load (propeller) is applied -
RPM = 1800 X 11.1 = 19980 rpm
RPS = RPM/60 = 333 rps
No load current = 0.5A @ 10V
Load current depends on weight and shape of propeller.