The controller transfer function =

$$\frac{125K_p s + 125K_i}{s^3 + 5s^2 + 125K_p s + 125K_i}$$
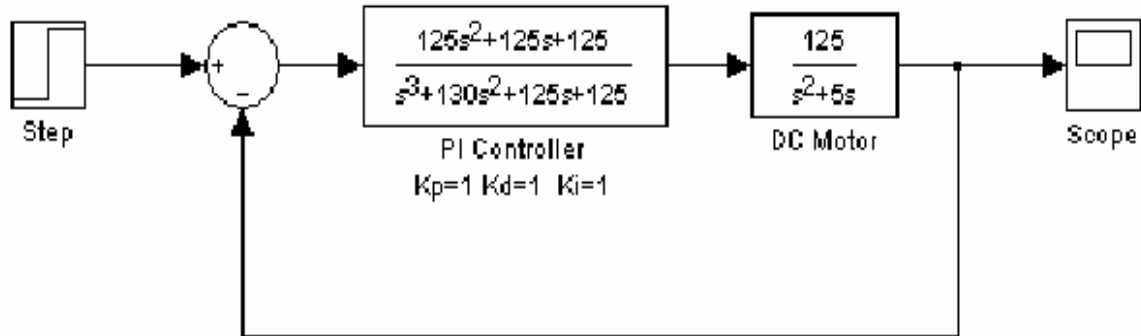

Figure (A.3): Model for PID Controller

The Controller transfer function =

$$TFsys = \frac{125K_D s^2 + 125K_p s + 125K_I}{s^3 + (125K_D + 5)s^2 + 125K_p s + 125K_I}$$
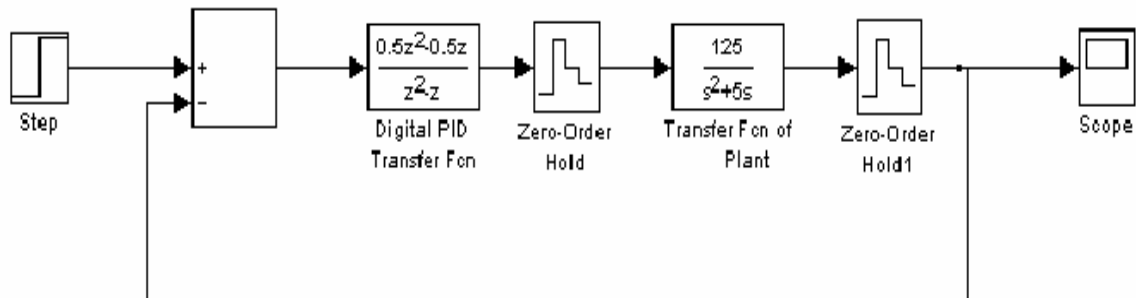
Simulink Model for Discrete System:

Figure (A.4): Model for Discrete PID controller