TO ct of Proportional Controller [P- controller]

* The proportional controller produces an output signal which is proportional to error signal. The transfer function of proportional controller is K_p. The term K_p is called the gain of the controller.

* Hence the proportional controller amplifies the error signal and increases the loop gain of the system. The following aspects of system behaviour are improved by increasing loop gain.

(i) Steady state tracking accuracy.

(ii) Disturbance signal rejection

(iii) Relative stability

* To increase in loop gain it decreases the sensitivity of the system to parameter variations. The drawback in proportional control action is that it produces a constant steady state error.

Effect of PI- controller :-

* The proportional plus integral controller [PI-controller] produces an o/p signal consisting of two terms : one proportional to error signal & the other proportional to the integral of error signal

Transfer function of PI controller $G_c(s) = K_p \left(1 + \frac{1}{T_i s}\right)$

$\Rightarrow K_p \left[\frac{T_i s + 1}{T_i s}\right]$