

# BITT POLYTECHNIC, RANCHI

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

### EXPERIMENT NO.

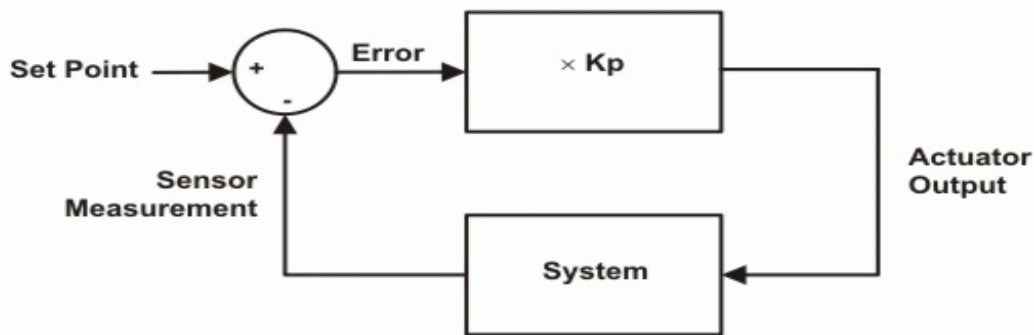
**AIM:** - Study of Proportional (P) controller.

**APPARATUS:** - PID trainer kit, CRO, Patch cords etc.

**THEORY:-**

**Proportional control**, in engineering and process control, is a type of linear feedback control system in which a correction is applied to the controlled variable which is proportional to the difference between the desired value (set point, SP) and the measured value (process variable, PV). Two classic mechanical examples are the toilet bowl float proportioning valve and the fly-ball governor.

**Proportional Control Block Diagram**



**PROCEDURE:-**

- 01 After making, all required connection on board switch on the power supply and start the experiment.
- 02 Ground PV and inputs of summing block which are not in use.
- 03 Set + 0.5V at test point TP1:
- 04 Apply set point TP4 to proportional input.
- 05 Check the output of proportional block with digital voltmeter given on board.
- 06 Vary slowly the  $K_p$  value, observe the change in the output, and find out the proportional band that is  $PB = 100/K_p$ .
- 07 In the same manner, we can check by applying square and triangular wave and compare the output with table no.3 shown below.

**OBSERVATION TABLE:-**

Set +0.5V at set point TP1.

Apply set print to proportional input then output of proportional block = 0.85V.

**Table 3:**

$K_p$	PB ( $100/K_p$ )
0.90	111.11
0.95	105.26
1.00	100.00
1.05	95.23
1.10	90.90
1.15	86.95

$K_p$	PB ( $100/K_p$ )
1.20	83.33
1.30	76.92
1.50	66.66
2.00	50.00
2.50	40.00
4.50	22.22