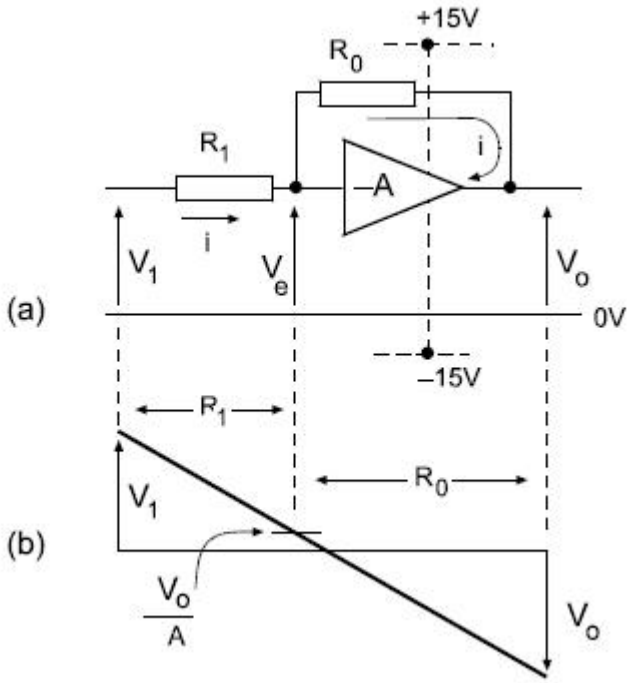
TRAINER KITS



Procedure:

Two AC signals are available from the test signal generator in the mechanical unit.

a) Connect the circuit as per the diagram
b) Set the potentiometers P1 and P3 to zero and make the connections as per the figure.
c) Set the frequency to 10Hz and arrange to display the output V0.
d) If P1 and P3 are adjusted separately in the individual waveforms will be displayed.
e) Set the potentiometer P1 and P3 to 50 and decide whether the displayed V0 is correct for the addition of both signals.
f) Slightly increase P1 and P3 and note that the waveform peaks limit as the amplifier is being momentarily over-loaded.
g) Observed the output waveform.

Result:

Thus familiarized with the operational amplifier characteristics.

EX NO: 8

UNSTABLE SYSTEM

Aim:

To make a study about an unstable system.

Equipment Required;

Analog unit
Mechanical unit

Theory:

Motor characteristics show that there is delay in speed response of a motor to a sudden change of supply voltage.

An additional separate delay in system can because more marked able to move further before the drive is reserved.

Additional Delay:

Most additional delays have the general characteristics of a time constant, represented by RC circuit.

Characteristics may be obtained by the op-amp circuit where there is a capacitor in parallel with o/p resistor.

Procedure:

a) Connect the system according to the figure.
b) Set the error feedback resistor to 100kohm, apply a square 15v at 0.1Hz and set P1 to 100%
c) Set the feedback resistor
d) Check the system can be established by using velocity feedback.

EX NO: 10

INTRODUCTION TO 3 TERM CONTROL

Aim:

To have an introduction to the 3 term control.

Apparatus required:

Analog unit
Mechanical unit
Power supply
Oscilloscope

Theory:

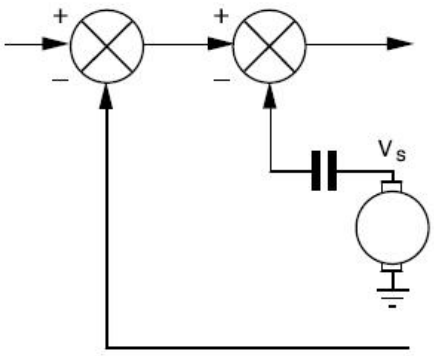
A more general method to improve system performance is to arrange that the drive signal to the motor other o/p element is the combination of direct error, with components of the derivative create of and integral of the error.

Three Term controller:

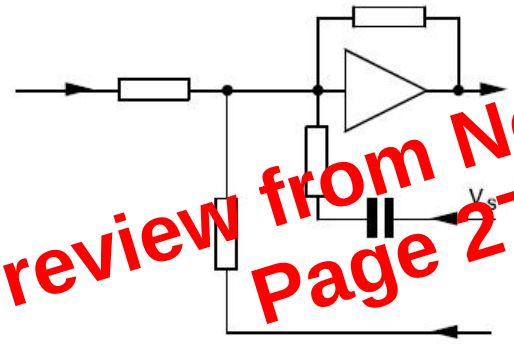
A general controller combines integral and derivative actions, with the direct error as in circuit.

Procedure:

a) The upper amplifier in the controller is intended for use as a differentiator.
b) Arrange the circuit, where the upper amplifier is connected as a limited differentiator.
c) Make an XY display between the triangle test wave form and the amplifier output.
d) Set the test frequency to about 1Hz
e) Since the capacitor is 1mf , a voltage rate of change of 1V/s would gives I=40mA



(a) General Principle



(b) Circuit arrangement

Result:

Thus the transient velocity and derivative feed forward are studied