2/6/2022

EXPERIMENT NO.7

EC111

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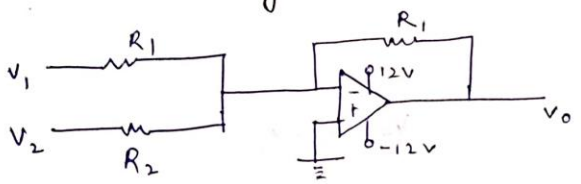
Experiment No. 7

Aim: Implementation of Adder and Substractor circuit.

Apparatus: bread board, Resistors, wires, etc.
IC741

Circuit Diagram:

For Inverting adder circuit



$R_1 = R_2 = R = 1k\Omega$

Observation:

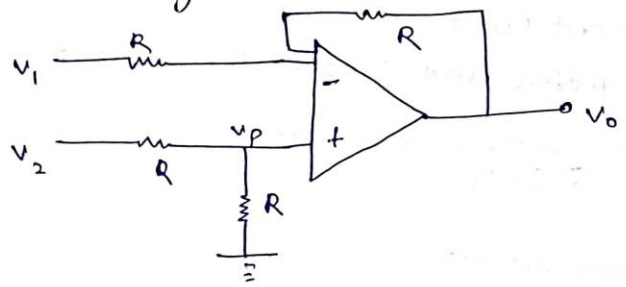
S. No.	V_1	V_2	$V_o = -(V_1 + V_2)$
1	2.0985	5.033	-7.041
2	4.095	5.056	-8.874
3	1.623	4.614	-6.124
4	2.578	5.584	-8.075

2.6.22

for Substractor:

Circuit diagram:

$R = 1K\Omega$



Observation:

S.No.	V_1	V_2	$V_o = V_2 - V_1$
1	2.639	5.585	2.9734
2	1.668	5.067	3.429
3	1.0973	5.067	3.906
4	2.0619	4.547	2.522

2.6.22

EXPERIMENT NO. 7

TITLE: IMPLEMENTATION OF ADDER AND SUBTRACTOR CIRCUIT.

OBJECTIVE:

- To design an adder amplifier circuit and draw the VTC.
- To design a subtractor/difference amplifier circuit and draw the VTC

APPARATUS REQUIRED:

- Breadboard
- Connecting wires
- Resister
- Power supply
- 741 IC (op-amp)

THOREY:

ADDER:

An adder is an electronic circuit that produces an output, which is equal to the sum of the applied inputs. This section discusses

the op-amp-based adder circuit. An op-amp-based adder produces an output equal to the sum of the input voltages applied at its inverting terminal. It is also called a summing amplifier since the output is an amplified one.

FORMULA USED:

$Vo = -((Rf/R1)V1 + (Rf/R2)V2 + (Rf/R3) V3)$

If Rf =R1=R2=R3=R in ohms

Therefore, $Vo = -(V1 + V2 + V3)$

SUBTRACTOR:

A subtractor is an electronic circuit that produces an output, which is equal to the difference between the applied inputs. This section discusses the op-amp-based subtractor circuit. An op-amp-based subtractor produces an output equal to the difference between the input voltages applied at its inverting and non-inverting terminals. It is also called a difference amplifier since the output is an amplified one.

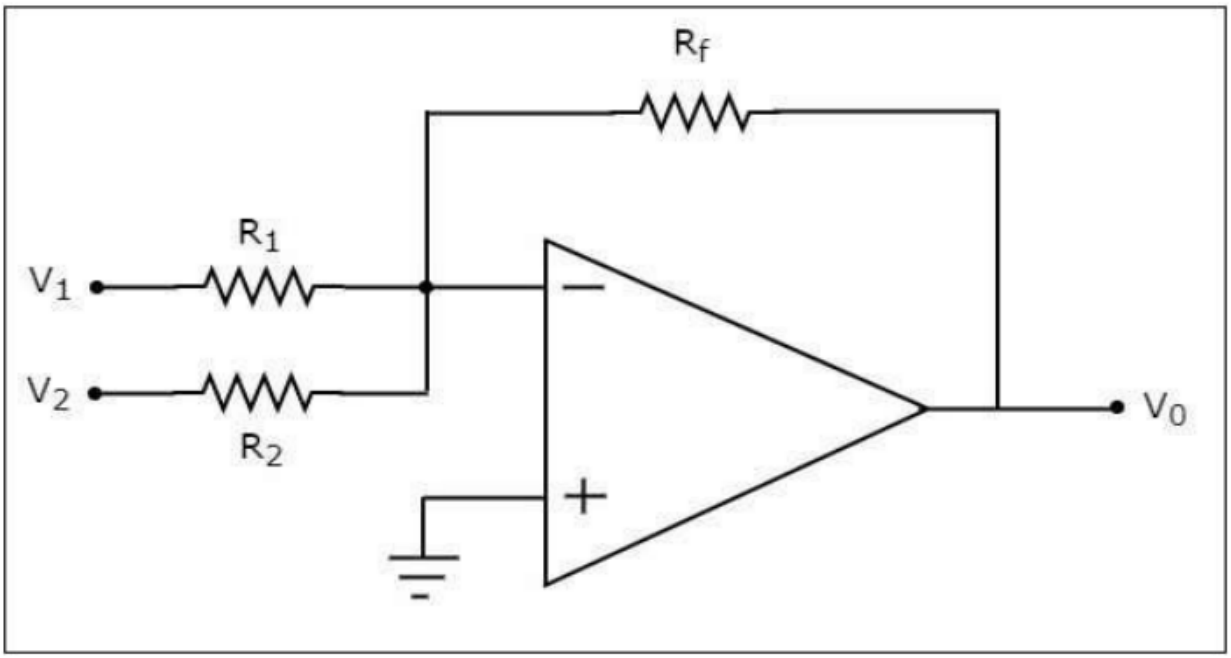
FORMULA USED:

$Vo = (R2/R1) * (V2 - V1)$

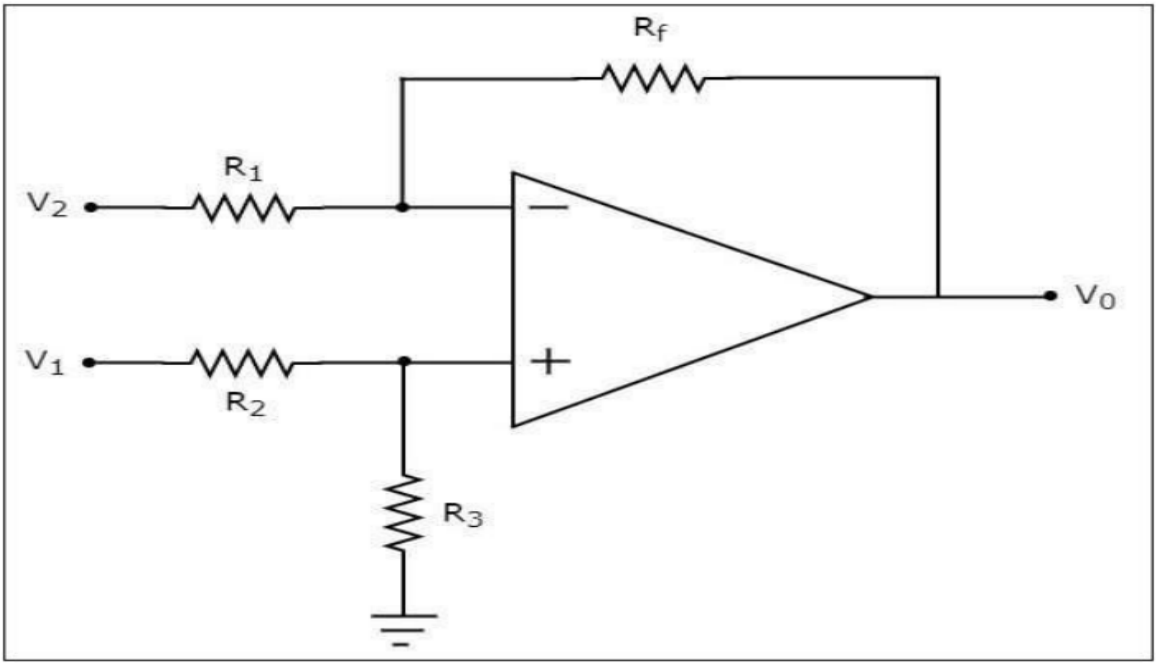
If R2=R1=R then, $Vo = (V2 - V1)$

CIRCUIT DIAGRAM:

ADDER:



SUBTRACTOR:



OBSERVATION:

ADDER:

S.NO.	V1	V2	V0=-(V1+V2)
1	2.095	5.033	-7.041
2	4.095	5.056	-8.874
3	1.623	4.614	-6.124
4	2.578	5.584	-8.075

SUBTRATOR:

S.NO.	V1	V2	V0=(V2-V1)
1	2.639	5.585	2.9734
2	1.668	5.067	3.429
3	1.0973	5.067	3.906
4	2.0619	4.547	2.522

RESULT:

- Successfully verified the adder amplifier circuit.
- Successfully verified the subtractor amplifier circuit.

PRECAUTIONS:

- Connections should be made accordingly to the circuit diagram only.
- Do not be on the DC power supply for a long time otherwise diode may be burned.
- Wires should be tight and no short-circuiting should be there.
- Do not cross the maximum power rating.