Exp.No.7

VOLTAGE FOLLOWER

AIM:

To design and construct a Voltage follower or unity gain amplifier using IC741.

APPARATUS:

1. Operational Amplifier mA 741 IC –1No.
2. Resistors 1KOhm
3. Dual Power supply(0-20V)
4. Regulated Power Supply.(0-20V)
5. Multimeter
6. CRO and Probes
7. Funtion Signal Generator.
8. Bread board
9.Connecting wires

THEORY:

Voltage follower is basically a non-inverting amplifier with RF=0 & R1= infinity. Here the output voltage is as same as that of the input voltage. Hence, the amplifier output is related to the input as,

$$V_{out} = V_{in}$$

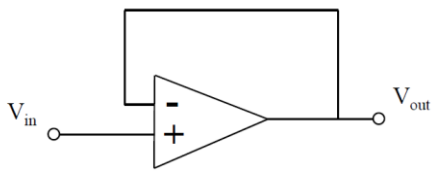


Fig: Voltage follower configuration of op-amp

Gain = 1 + (Rf / Rin) Here Rf is zero,

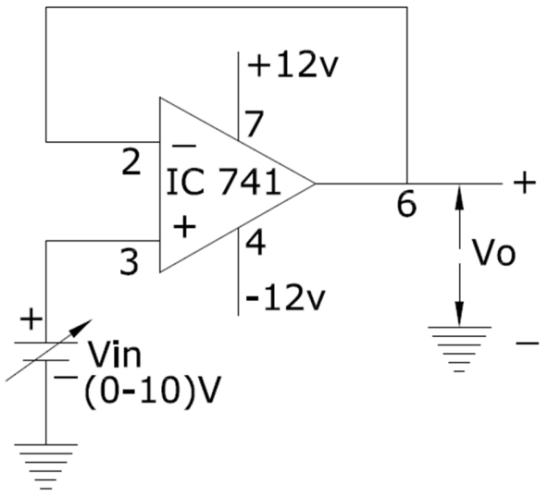
Gain = 1 + (0 / Rin)

Gain = 1 + 0

Gain = 1

The name ''follower'' is due to the fact that the output voltage follows the input. Voltage followers are widely used to provide buffering between high internal resistance soures and a load.

CIRCUIT DIAGRAM:



PROCEDURE:

1.Initially set +Vcc = 12 volts and -Vcc to -12 volts.

2.Measure all resistors that are used in the amplifier circuits using the multimeter and record these values

3. As shown in the circuit diagram connect the circuit for Voltage Follower on a breadboard

4.Before turning any power on, double check the wiring to make sure that it is correct. Make sure that the power supply to the op-amp is correctly wired as not to apply the incorrect polarity to the op-amp.

5.For DC input apply a 1-volt DC input to non-inverting input terminal of IC741 for Vin from the dc supply and check the output voltage Vo at the output terminal using the multimeter.

6.Compare practical Vo with the theoretical output voltage Vo = Vin

7. For AC input connect the non-inverting input terminal of IC741 op-amp to function generator and output terminal to CRO.

8. Feed input from function generator and observe the output on CRO.

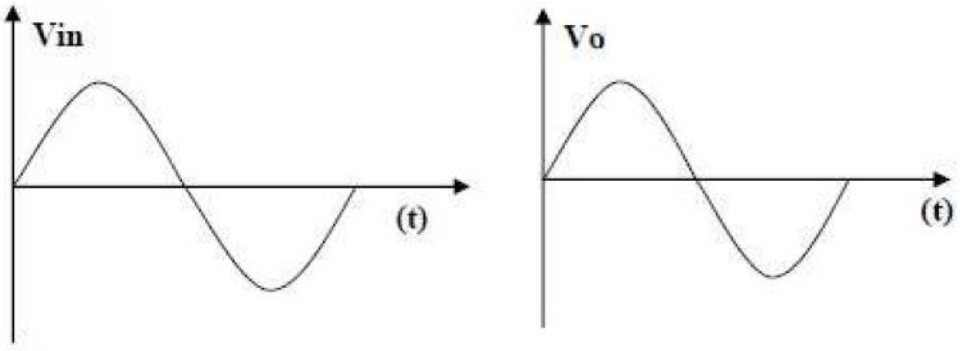
9. Draw the input and output waveforms on graph paper.

10. Compare the input and output waveforms.

TABULAR COLUMN:

S.No	V_{in}		V_{out}		Gain = V_{out}/V_{in}
	Theory	Practical	Theory	Practical	
1					
2					
3					

EXPECTED GRAPH:



WORKSHEET:

Input Waveform:

Output Waveform:

RESULT:

The Practical Values of V_o observed are equal to the Theoritical values. From this we can conclude that the Non Inverting Amplifier using 741 OP-AMP is satisfying its function properly. And it is also noticed that gain is depending on R_2 or R_f feedback Resistor.