

Experiment no : 1.

Voltage Follower Circuit.

Aim: To design and setup a Voltage follower circuit with OP AMP IC-741 and observe the waveform.

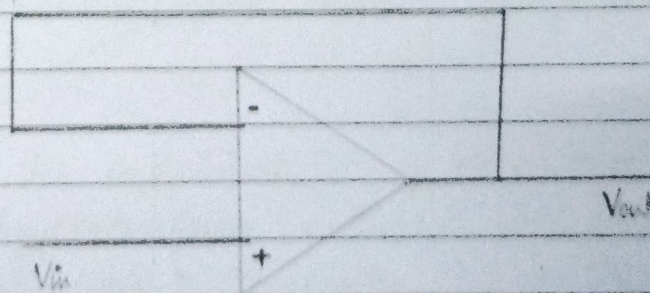
Apparatus required :

IC 741, CRO and Probes, Function generator, bread board, Connecting wire, Power Supply.

Theory:

Voltage follower is basically a non-inverting amplifier with $R_f = 0$ and $R_i = \infty$. Here the Output voltage is same as that of the input voltage. Hence, the amplification or output is related to the input as,

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



$$\text{Gain} = 1 + \left(\frac{R_f}{R_{in}} \right) = 1 + \frac{0}{\infty} = 1 \quad (\text{for } R_f = 0)$$

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

Teacher's Signature : _____

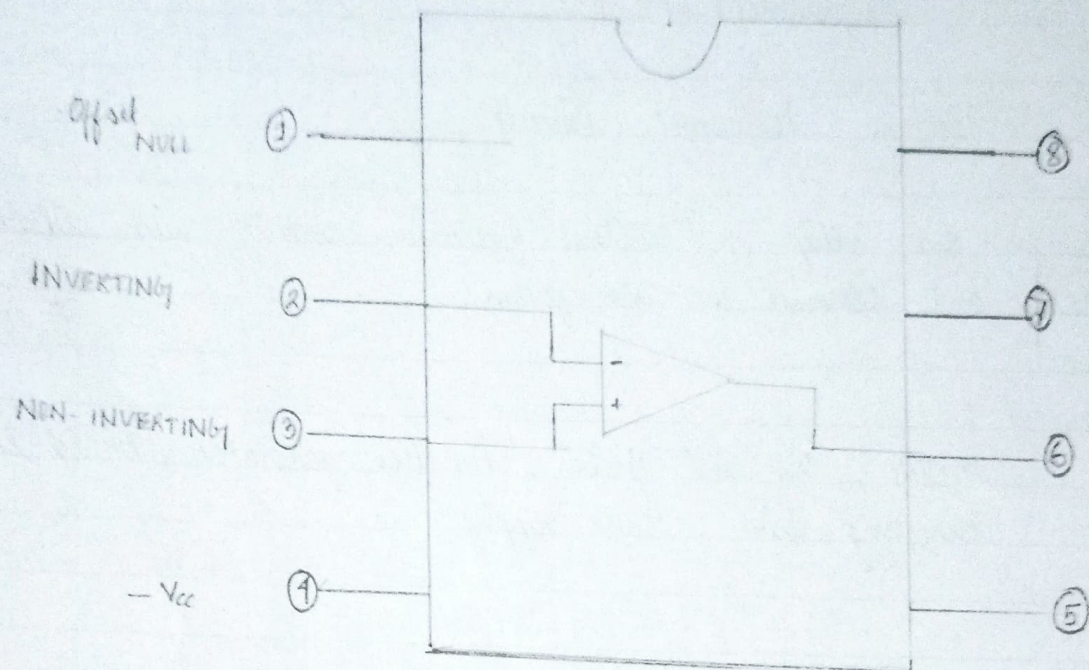
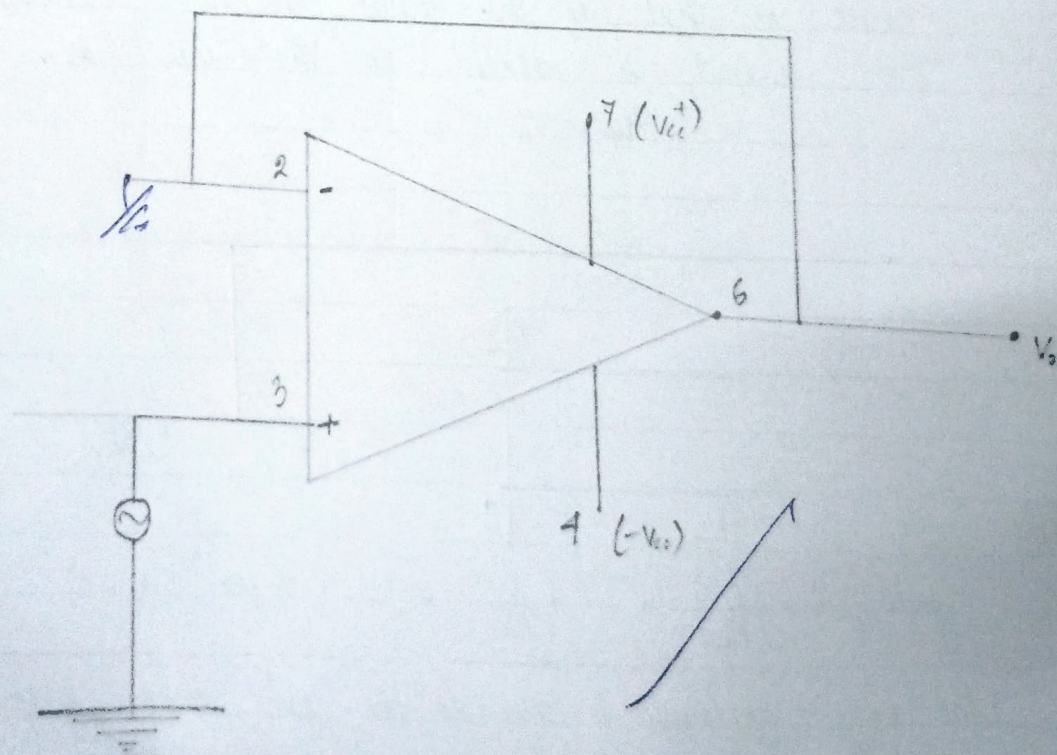


Fig : 4C 741



CIRCUIT DIAGRAM

Procedure:

- ② Initially set $+V_{cc} = 15V$ and $-V_{cc} = -15V$
- 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.
- ⑤ Compare practical V_o with theoretical output voltage $V_o = V_{in}$.
- ⑥ Connect the non-inverting input terminal of IC 741 Op-Amp to function generator and output terminal on CRO.
- ⑦ Feed input from function generator and observe the output on CRO.
- ⑧ Compare the input and output waveforms.

Observations:

From the experiment it is clear that,

- Input waveform = Output waveform.
- $V_{in} = V_{out}$, practically.
- Gain = 1
- Practical Gain \approx Theoretical gain

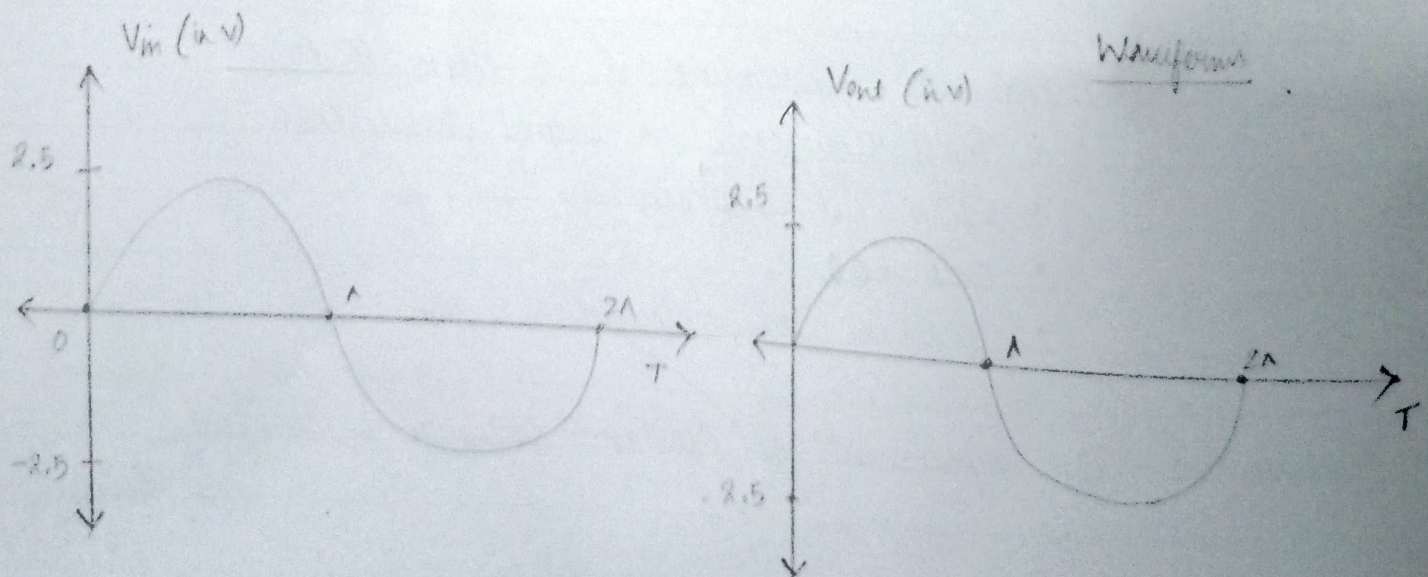
Conclusion: The experiment of Voltage follower is verified.

P.T.O.

Teacher's Signature: _____

Observation Table:

Sl. No.	Frequency (kHz)	Input (V_i)	Output (V_o)	Gain in dB $20 \log \left(\frac{V_o}{V_i} \right)$
1	1	5	5	0
2	2	5	5	0
3	3	5	5	0
4	4	5	5	0
5	5	5	5	0
6	6	5	5	0
7	7	5	5	0
8	8	5	5	0
9	9	5	5	0
10	10	5	5	0



Precautions:

- Before turning the power on, double check the wire 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 ~~in-correct~~ polarity to Op-Amp.