Course Name:	**Elements of Electrical and Electronics Engineering**	**Semester:**	**II**
Date of Performance:	**June '21**	**Batch No:**	**E1**
Faculty Name:		**Roll No:**	**16010321005**
Faculty Sign & Date:		**Grade/Marks:**	**/ 25**

Experiment No: 10

Title: Inverting and Non-inverting amplifier using OPAMP

Aim and Objective of the Experiment:

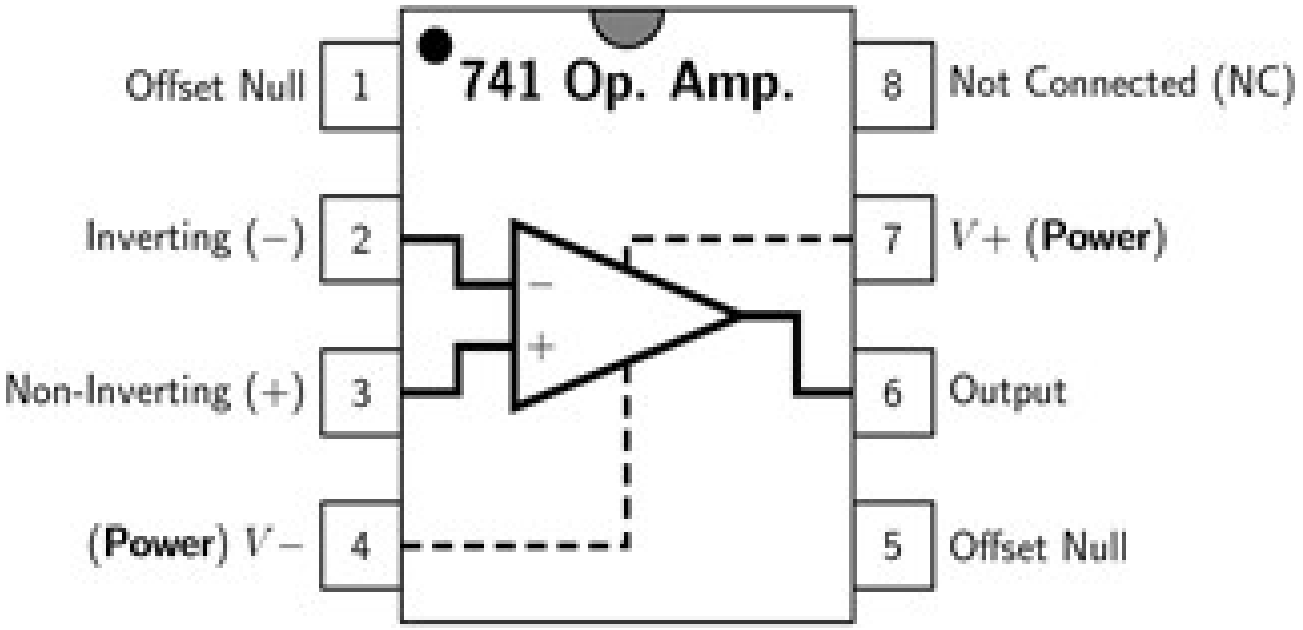
- To understand the open loop configuration of OPAMP
- To understand the concept of negative feedback and closed loop configuration of OPAMP.
- To understand inverting and Non-inverting amplifier of OPAMP
- To find gain of inverting and non-inverting amplifiers

COs to be achieved:

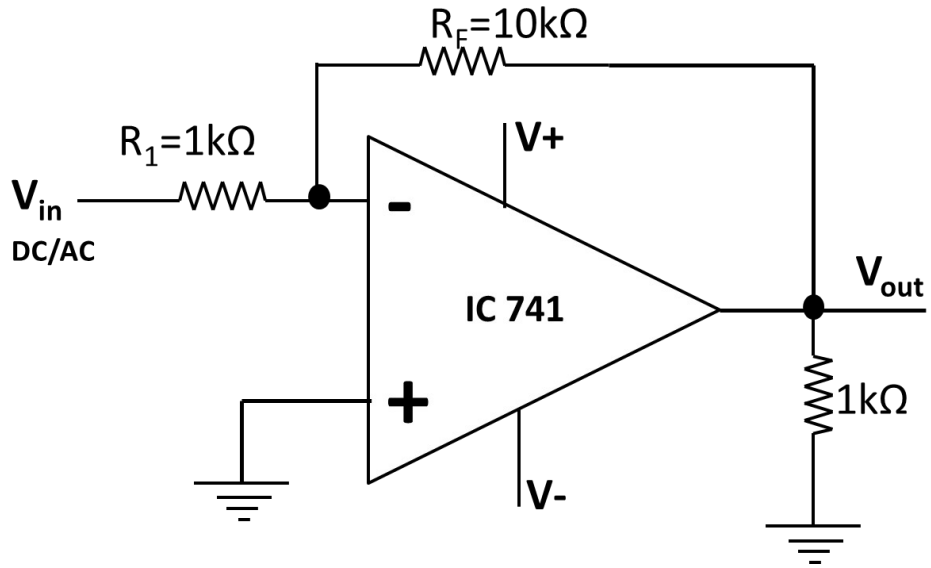
CO5: Understand operational amplifier and its applications

Circuit Diagram/ Block Diagram:

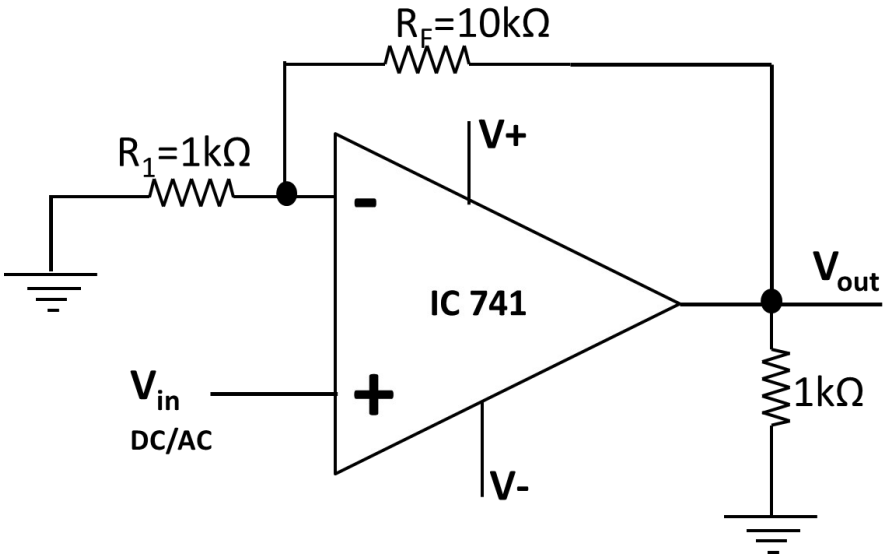
Pin diagram of IC 741



1. Inverting Amplifier



2. Non-inverting Amplifier



Observation Table:

1. A. Inverting Amplifier: DC input Voltage

Sr.No.	Vin (V)	Vout (V)	Practical Gain = Vout/Vin	Theoretical Gain=-RF/R1
1.	0.2	-0.99	-4.95	-5.00
2.	0.5	-2.49	-4.98	-5.00
3.	1.0	-4.99	-4.99	-5.00

1. B. Inverting Amplifier: AC input Voltage

Sr.No.	Frequency (Hz)	Vin(p-p) (V)	Vout(p-p) (V)	Practical Gain = Vout/Vin	Theoretical Gain=-RF/R1
1.	1 K	0.5	-2.50	-5.00	-5.00
2.	1 K	1.0	-5.00	-5.00	-5.00
3.	1 K	2.0	-10.00	-5.00	-5.00

2. A. Non-inverting Amplifier: DC input Voltage

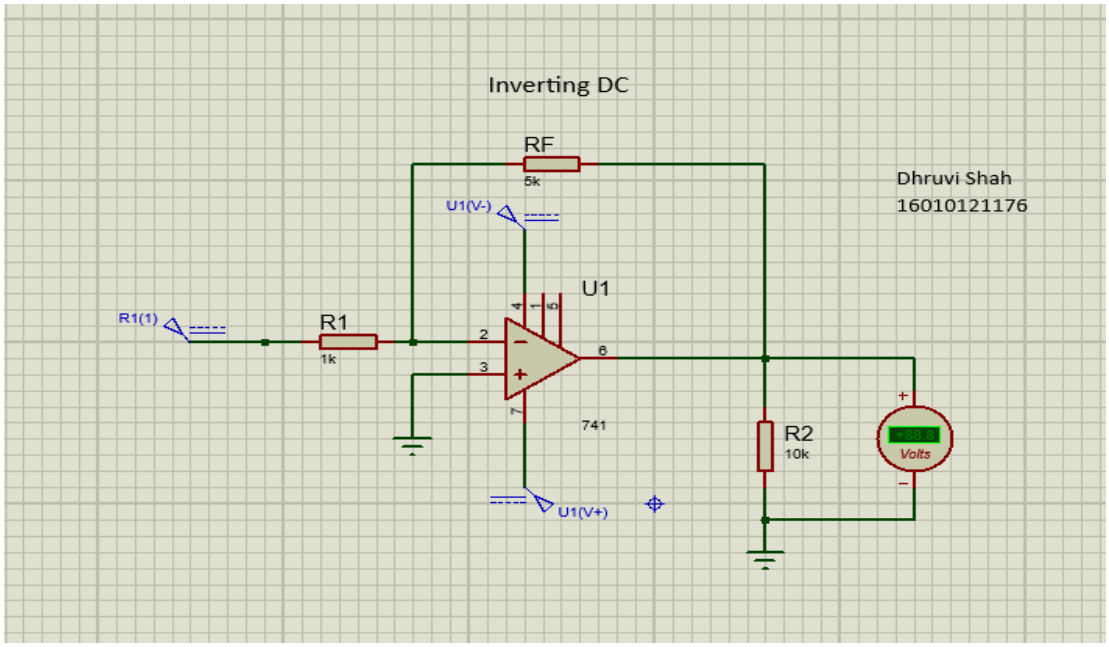
Sr.No.	Vin (V)	Vout (V)	Practical Gain = Vout/Vin	Theoretical Gain=1+RF/R1
1.	0.2	1.21	6.05	6.00
2.	0.5	3.01	6.02	6.00
3.	1.0	6.01	6.01	6.00

2. B. Non-inverting Amplifier: AC input Voltage

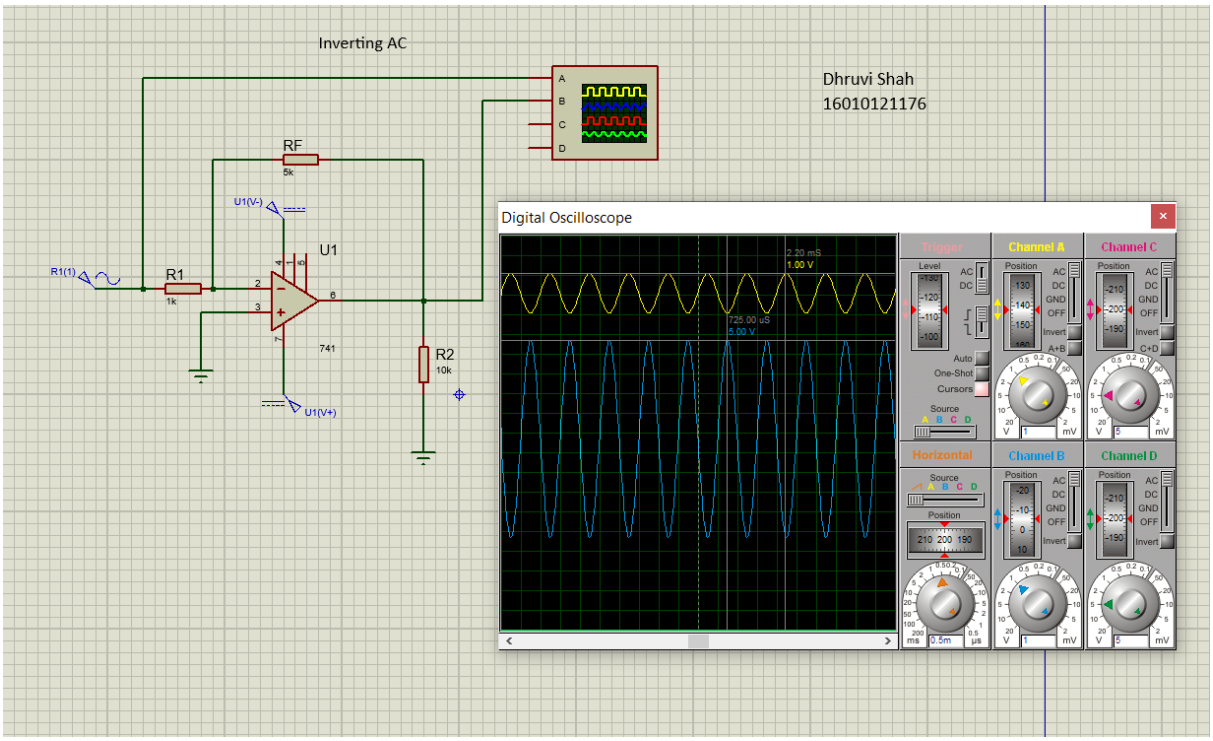
Sr.No.	Frequency (Hz)	Vin(p-p) (V)	Vout(p-p) (V)	Practical Gain = Vout/Vin	Theoretical Gain=1+RF/R1
1.	1k	0.5	3.00	6.00	6.00
2.	1k	1.0	6.00	6.00	6.00
3.	1k	2.0	12.00	6.00	6.00

Outputs:

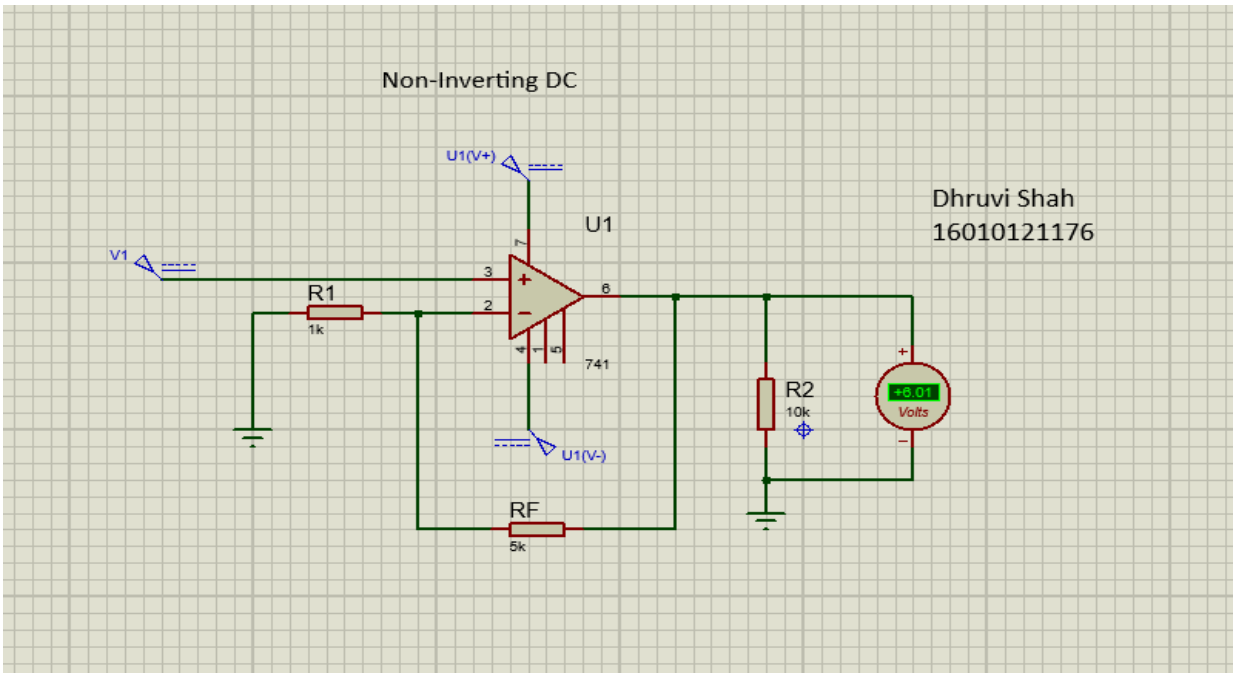
Inverting DC:



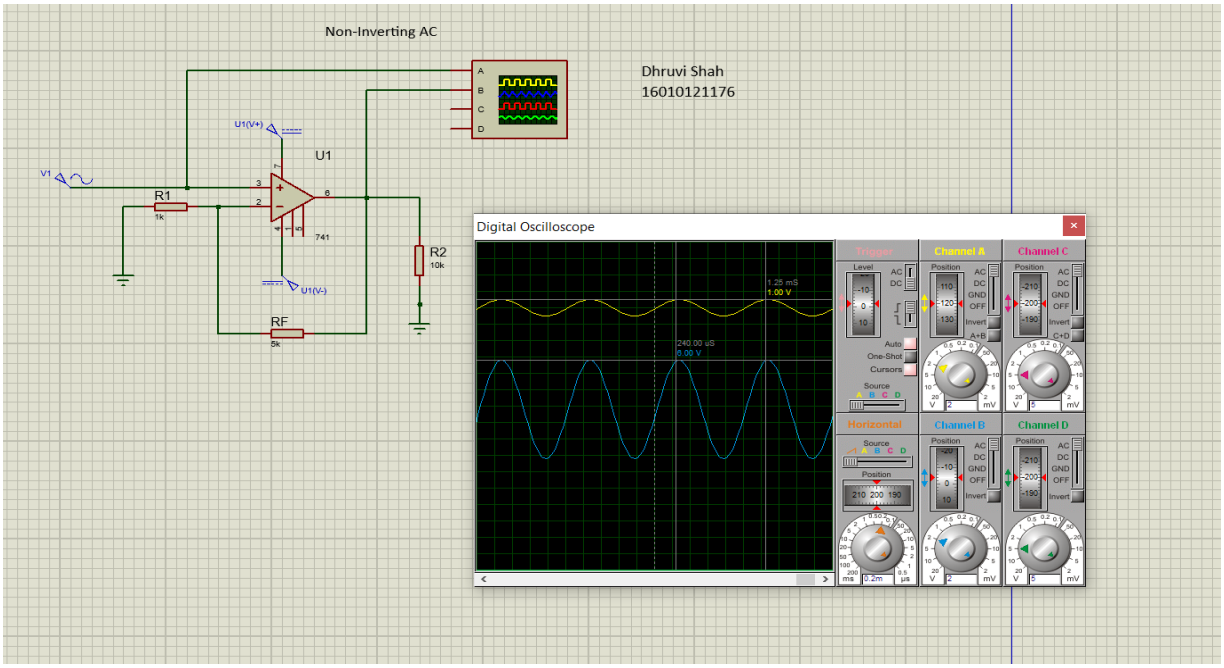
Inverting AC:



Non-Inverting DC:



Non-Inverting AC:



Post Lab Subjective/Objective type Questions:

1. List the characteristics of Ideal operational amplifier.

Characteristics of an Ideal Operational Amplifier are:

Infinite open-loop gain G = v_{out} / v_{in}

Infinite input impedance R_{in}, and so zero input current

Zero input offset voltage

Infinite output voltage range

Infinite bandwidth with zero phase shift and infinite slew rate

Zero output impedance R_{out}, and so infinite output current range

Zero noise

2. List the important parameters of IC 741 operational amplifier.

Important parameters of IC 741 Op-amp are:

(1) Open loop gain
(2) Input impedance
(3) Output impedance
(4) CMRR
(5) Input Offset voltage and current
(6) Output offset voltage and current
(7) Gain Bandwidth product
(8) Power supply voltage

Conclusion:

We have understood the open loop configuration of OPAMP and closed loop configuration of OPAMP, inverting and non-inverting amplification of OPAMP and to find the gain of inverting and non-inverting amplifiers.

Signature of faculty in-charge with Date: