Experiment Title 10

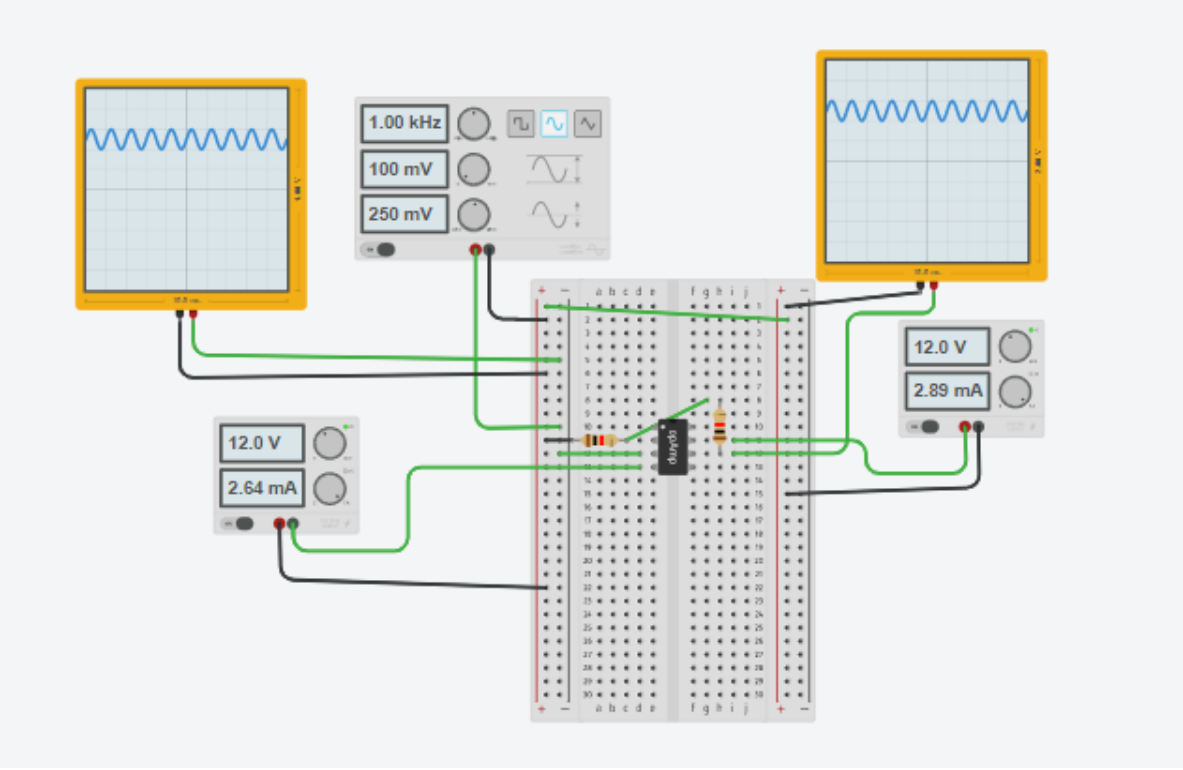
STUDENT NAME: RAJDEEP JAISWAL	**UID: 20BCS2761**
SECTION: 20BCS26-B	**SEMESTER: 02**
DATE OF PERFORMANCE: MAY 7, 2021	**SUBJECT NAME: BEEE**

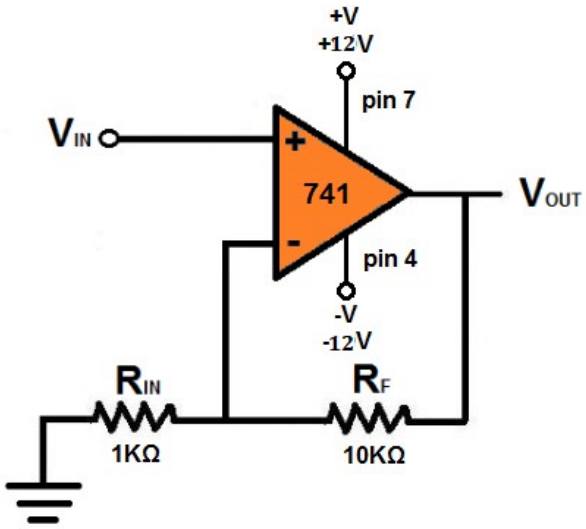
- **Aim: To measure gain of non- inverting operational amplifier.**

- **Apparatus:**

Sr. No.	EQUIPMENT NAME	SPECIFICATIONS AND RANGE	QUANTITY IN No.
1.	Op-amp IC	IC 741 op-amp	1
2.	CRO	230 V, 30 MHZ	1
3.	Resistor	10 kilo ohms, 1 kilo ohm	2
4.	Digital multimeter	--------	1
5.	Function generators	10 Hz to 1MHz	1
6.	CRO PROBE	--------	2
7.	BREAD BOARD	---------	1
8.	Connecting wires	As per requirement	-----

- **Circuit Diagram:**





- **THEORY:**

Non-inverting Amplifier: An amplifier whose O/P is in phase with the input. It can amplify ac & dc signals. Its gain depends upon the values of feedback resistance (RF) & input resistance (R1). Figure 1 shows inverting amplifier.

VO = VIN (1+RF/Rin)

Gain

$$A = (1 + R_F/R_{in})$$

4. Steps for experiment:

1. **Connect the circuit.**
2. **Connect supply voltage to I/P.**
3. **Note the values of RF & R1.**
4. **Note VIN & VOUT with the digital multimeter.**
5. **Repeat steps 2 & 3 for different values of RF &R1.**

OBSERVATION:

S. No.	R_F	R_{IN}	V_{IN}	V_O	GAIN $1+ R_f/R_{in}$
1	10 KILO OHM	1 KILO OHM	-12 V	-132 V	11

5. Calculations/Theorems /Formulas used etc

$V_O= (1+ R_f/R_{in}) V_{in}$

$V_O= (1+10/1) *(-12)$

$V_O= 11*(-12)= -132$ V

GAIN (A)$= 1+ R_f/R_{in}$

$= 1+ 10/1$

$= 11$

6. Sources of error:

Due to internal resistance of multimeter.

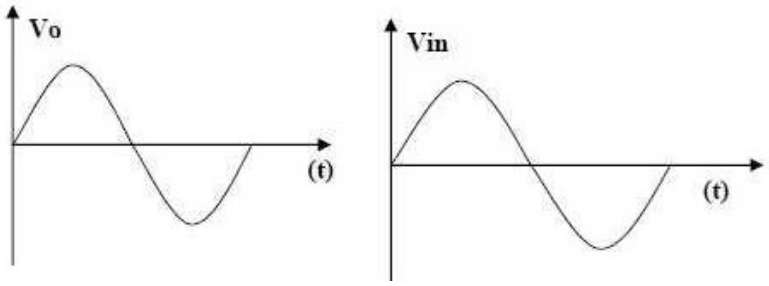
Due to interruption of power supply.

Due to wrong connection of circuit.

7. Percentage error (if any or applicable):

8. Result/Output/Writing Summary:

In non-inverting amplifier O/P is in phase with I/P with I/P. The waveform for non-inverting and amplifier:



9. Graphs (If Any): Image /Soft copy of graph paper to be attached here

Learning outcomes (What I have learnt):

From this experiment students will be able to

understand the concept of inverting amplifier

understand the construction ad working of inverting amplifier

learn gain of inverting amplifier

Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Worksheet completion including writing learning objectives/Outcomes.(To be submitted at the end of the day).		10
2.	Post Lab Quiz Result.		5
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		5
	Signature of Faculty (with Date):	Total Marks Obtained:	