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IPOU

Experiment Title. 4

Student Name:

Branch: BE-CSE

Semester: First

Subject Name: BEEE

UID: 2

Section/Group 22

Date of Performance: 16.11.2022

Subject Code: 22ELH-101

1. Aim: To design LED Flasher light

2. Apparatus:

Resistance

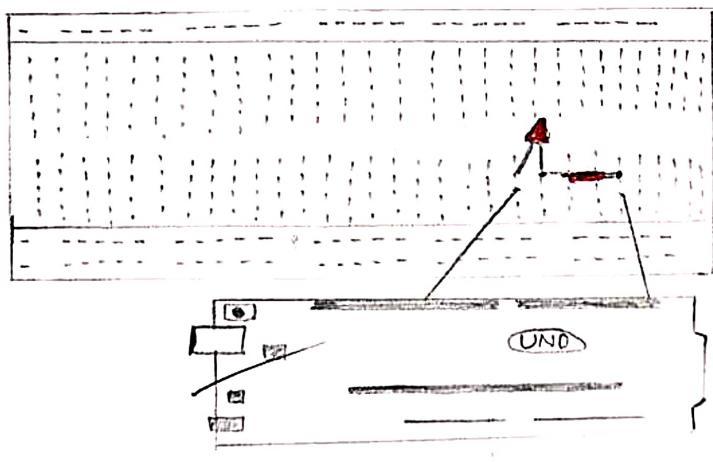
LED Light

Bread Board

Connecting wires

Arduino - Uno

3. Circuit Diagram:





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4. Steps for experiment:

1. Connect LED, resistor in series in bread board.
2. Connect digital output pins to the bread board as shown in diagram.
3. Connect Arduino-Uno to the computer with use.
4. Open Arduino software code given code.
5. Run code.

5. Calculations/Theorems /Formulas used etc

CODE:

```
void setup ()  
{  
  pinMode (13, OUTPUT);  
}  
void loop ()  
{  
  digitalWrite (13, HIGH);  
  delay (100);  
  digitalWrite (13, LOW);  
  delay (100);  
}
```

6. Observations/Discussions:

Blinking (Flashing) of LED observed according to the delay input given.

7. Percentage error (if any or applicable):



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8. Result/Output/Writing Summary:

- Introduction to Arduino Uno.
- Circuit designing of LED flashes light.
- Verification of experiment.

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

Learning outcomes (What I have learnt):

1. Verify circuit using programming.
2. Design the circuit using arduino uno.
3. Identify turning ON or OFF LED light.
- 4.
- 5.

Arshdeep



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IPOU

Experiment Title. 5

Student Name
Branch: BE-CSC
Semester: First
Subject Name : BEEE

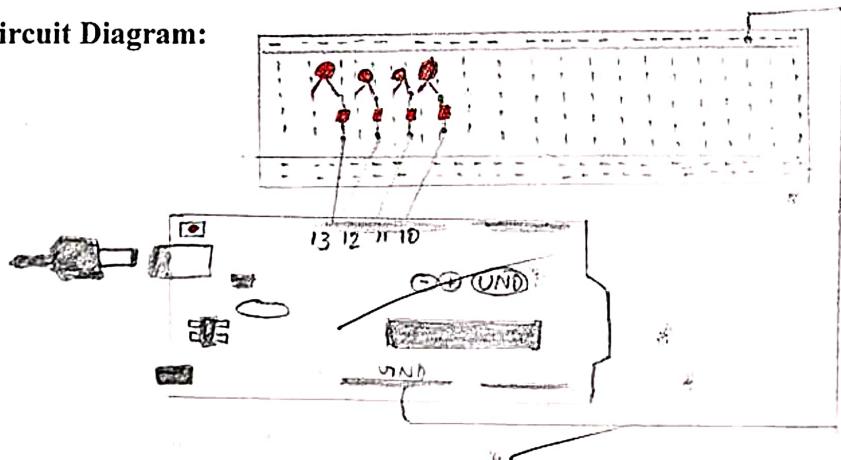
UIL
Section/Gro
Date of Performance: 16/11/2022
Subject Code: 22ELH-101

1. Aim: To design Christmas LED chases Light.

2. Apparatus:

Resistance
LED Light (0-2V)
Bread Board
connecting wires.
Arduino - UNO.

3. Circuit Diagram:



egov

✉ egov@cumail.in

CODE:

```
Void setup()
{
    for(int i=10; i<=13; i++)
    {
        pinMode(i, OUTPUT);
    }
}

Void setup()
{
    for(int i=10; i<14; i++)
    {
        all LEDS OFF();
        if (i!=13)
        {
            digitalWrite(-i, HIGH);
            digitalWrite(i+1, HIGH);
            delay(200);
        }
        else
        {
            digitalWrite(i, HIGH);
            digitalWrite(i-3, HIGH);
            delay(200);
            all LEDS OFF();
        }
    }
}
```



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4. Steps for experiment:

1. Connect LED, Arduino, Resistor in bread board according to the circuit diagram.
2. Type code or Arduino-uno software.
3. Execute code.

5. Calculations/Theorems /Formulas used etc

6. Observations/Discussions:

LED Bulbs glow one after one in same order from 10-13. then again 10-13 it creates chasing effect of light.

7. Percentage error (if any or applicable):



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8. Result/Output/Writing Summary:

- Circuit designing of LED
- Verification of experiment.

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

Learning outcomes (What I have learnt):

1. Identify turning ON or OFF LED light.
2. Design the circuit using Arduino-Uno.
3. Verify circuit using programming.

4.

5.

Cupless



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IPOU

Experiment Title. 6

Student Name:

Branch: BE-CSE

Semester: First

Subject Name: BEEE

UID: _____

Section/Group : 22B

Date of Performance: 07.12.2022

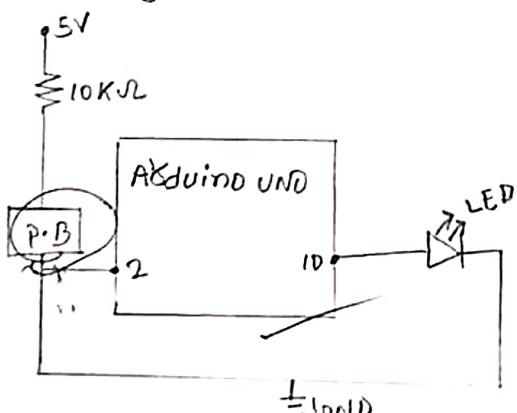
Subject Code: 22ELH-101

1. Aim: Design Door Bell using push button.

2. Apparatus:

1. ARDUINO
2. PUSH button
3. Resistance 10K ohm
4. Wires
5. Breadboard

3. Circuit Diagram:



Program:-

```
Void setup ()  
{  
    pinMode (10, INPUT);  
    pinMode (2, OUTPUT);  
}  
  
Void loop ()  
{  
    int x=digitalRead (10);  
    if (x==HIGH)  
    {  
        digitalWrite (2,HIGH);  
        delay (50);  
    }  
    else  
    {  
        digitalWrite (2,LOW);  
        delay (50);  
    }  
}
```

4. Steps for experiment:

- (i) connect the LED, Resistance, buzzes, push button to the arduino and breadboard according to the diagram.
- (ii) write the programme and then compile and run it.
- (iii) By pushing the push button, buzzes sound is produced.

5. Calculations/Theorems /Formulas used etc

6. Observations/Discussions:

7. Percentage error (if any or applicable):





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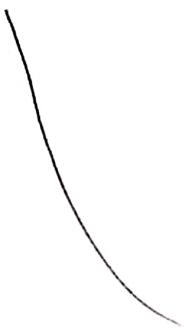


8. Result/Output/Writing Summary:

Designing of door bell was verified after uploading the program.



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



Learning outcomes (What I have learnt):

1. Identify turning ON or OFF Led light.
2. Design the circuit using ~~arduino uno~~.
3. Verify circuit using programming.
4. Understand concepts about circuits and LED.
5. Learnt use of ~~various equipment~~ in the circuit.



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Experiment Title. 7

Student Name:

UID: 2

Branch: BE-CSE

Section/Gro

Semester: First

Date of Performance: 14.12.2022

Subject Name: BEEE

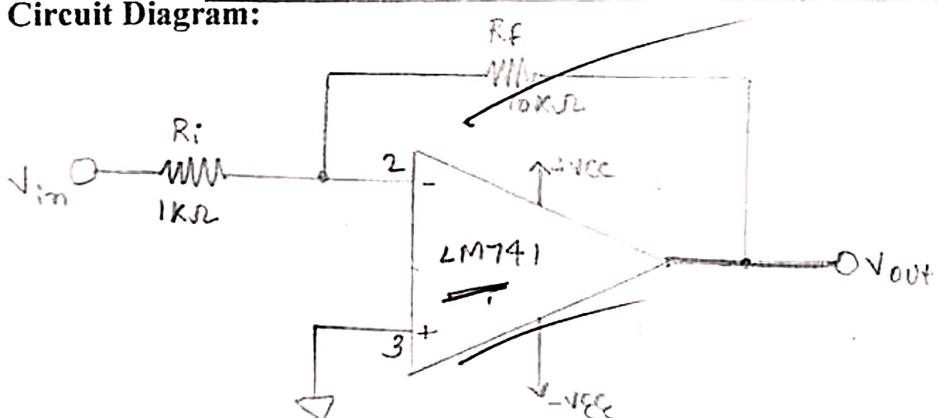
Subject Code: 22ELH101

1. Aim: To measure gain of inverting operational amplifiers.

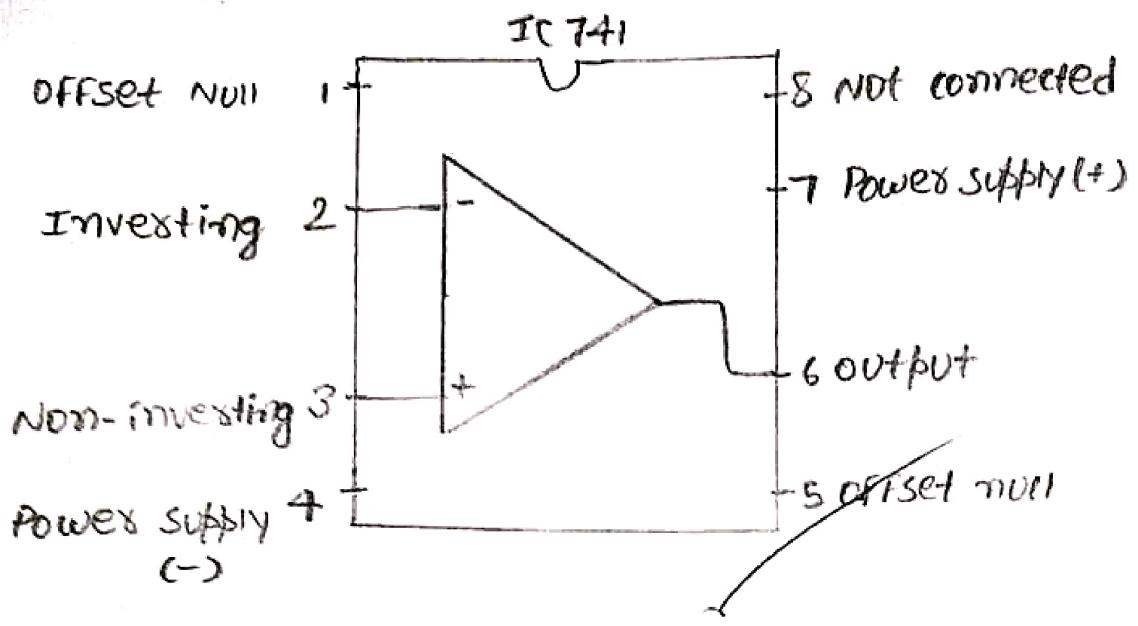
2. Apparatus:

S-N	Apparatus Name	Specifications & Range	Quantity
1.	OPAMP IC	IC 741 Op-amp	1
2.	CRO	0-220 V, 30 MHz	1
3.	CRO Probes	N.A	2
4.	Digital Multimeter	N.A	1
5.	Function Generator	10Hz to 1MHz	1
6.	Breadboard	-----	---
7.	Connecting wires As per requirement	-----	---

3. Circuit Diagram:



Circuit Diagram of inverting Operational Amplifier.





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4. Steps for experiment:

1. Connect the circuit as shown in the figure.
2. Connect supply voltage to I/P.
3. Note the values of R_f & R_{in} .
4. Note V_{in} & V_{out} with the digital multimeter.
5. Repeat steps 2 & 3 for different values of R_f & R_{in} .

5. Calculations/Theorems /Formulas used etc

$$V_{out} = -V_{in} \left[\frac{R_f}{R_{in}} \right]$$
$$= -5 \left(\frac{10}{1} \right)$$

$$\therefore V_{out} = -50V$$

$$\& V_o = (-10) \times 12V$$

$$V_o = -120V$$

$$G_{ain} = \frac{V_{out}}{V_{in}}$$

$$G_{ain} = -\frac{50}{5}$$

$$\therefore G_{ain} = -10$$

6. Observations/Discussions:

S.No	R_f	R_i	V_{in}	V_o	$G_{ain}(V_o/V_{in})$
01	10k Ω	1k Ω	5V	-50V	-10
02.	10k Ω	1k Ω	12V	-120V	-10

7. Percentage error (if any or applicable):

8. Result/Output/Writing Summary:

In inverting amplifiers O/P is out of phase with I/P with I/P.

In inverting amplifiers output is 180° out of phase with input.

The waveforms for inverting amplifiers has the phase difference of 180° .

9. Graphs (If Any): Image /Soft copy of graph paper to be attached here N.A**Learning outcomes (What I have learnt):**

1. Identify the gain of inverting amplifiers.
2. Design the circuit of inverting operational amplifiers.
3. Verify the output voltage of circuit.
4. Identify the different types of electrical elements.
5. Understand the basic principles of operational amplifiers.



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IPOU

Experiment Title. 8

Student Name:

UID: 1

Branch: BE-CSE

Section/Group: -

Semester: First

Date of Performance: 14.12.2022

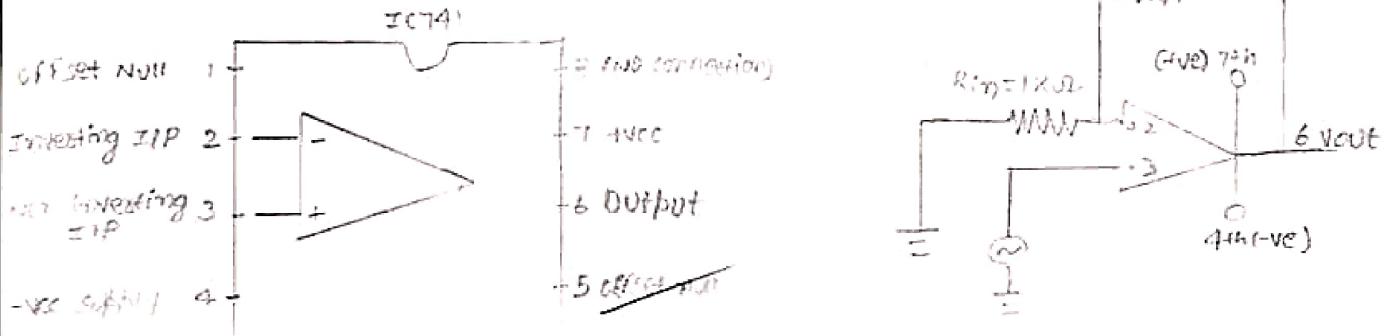
Subject Name: GEEE

Subject Code: 22ELH101

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

S.N	Apparatus Name	Specification & Range	Quantity
1.	OPAMP IC	LM741 OPAMP	1
2.	CRO	0-230V, 30MHz	1
3.	CRO Probes	-	2
4.	Digital Multimeters	-	1
5.	Function Generators	10 Hz to 1 MHz	1
6.	Breadboard	-	1
7.	Connecting wires	As per requirement	

2. Apparatus:



4. Steps for experiment:

for non-inverting Operational amplifiers:-

- (i) connect the circuit as shown in diagram
- (ii) connect the supply voltage to I/P.
- (iii) Note the values of R_f and R_{in}
- (iv) Note V_{in} and V_{out} with the digital multimeter.
- (v) Repeat the experiment for different values of R_f and R_{in}

5. Calculations/Theorems /Formulas used etc

$$\therefore V_o = V_{in} \left(1 + \frac{R_f}{R_i} \right)$$

$$V_o = 5 \left(1 + \frac{10}{1} \right)$$

$$\therefore \boxed{V_o = 55V}$$

$$V_o = 12 \left(1 + \frac{10}{1} \right)$$

$$\boxed{V_o = 132V}$$

6. Observations/Discussions:

S-ND	R_f	R_i	V_{in}	V_{out}	gain (V_o/V_{in})
1.	10k Ω	1k Ω	5V	55V	11
2.	10k Ω	1k Ω	12V	132V	11

7. Percentage error (if any or applicable):

NO ERRORS



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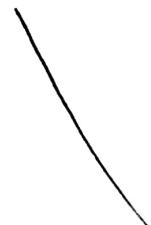
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8. Result/Output/Writing Summary:

In non-inverting amplifiers O/P is in phase with I/P with I/P. The waveform for the non-inverting amplifiers have the phase difference of 0(zero).

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



Learning outcomes (What I have learnt):

1. Identify the gain of non-inverting amplifiers.
2. Design the circuit of non-inverting operational amplifiers.
3. Verify the output voltage of circuit.
4. Function of cathode ray oscilloscope
5. Working of function generators



Experiment Title.

Student Name:
Branch: BE-CSE
Semester: First
Subject Name BEEE

UID: 2
Section/Group : 2.
Date of Performance:
Subject Code: 22ELH-101

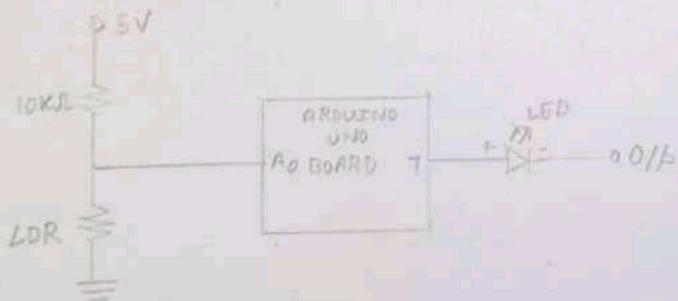
to design automatic street light using LDR

1. Aim: or

design automatic night lamp using Arduino

2. Apparatus: Resistance (10KΩ)
LED light (0-2V)
LDR
Breadboard
Jumper wires
ARDUINO UNO

3. Circuit Diagram:



Program:-

```
Void setup()
{
    serial.begin(9600);
    pinMode(7,OUTPUT);
}

Void loop()
{
    int c = analogRead(A0);
    serial.println(c);
    if (c < 850)
    {
        digitalWrite(7,LOW);
    }
    else
    {
        digitalWrite(7,HIGH);
    }
}
```



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4. Steps for experiment:

Step1: 10KΩ resistors connected through 5V and one end of LDR Ao in Arduino Uno.

Step2: Other end of LDR is connected to GND.

Step3: Finally LED was connected to 7 and ground.

Step4: Now program was uploaded in Arduino uno from computer using USB.

Step5: After Running the program, observe LED blinking according light intensity on LDR.

5. Calculations/Theorems /Formulas used etc

6. Observations/Discussions:

7. Percentage error (if any or applicable): N.A



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8. Result/Output/Writing Summary:

Designing of automatic night lamp was verified after uploading the program.

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

N.A

Learning outcomes (What I have learnt):

1. Identify the intensity of LED light.
2. Design the circuit using arduino uno.
3. Verify circuit using programming.
4. Identify the different types of electrical elements.
5. Designing of automatic night lamp.