LAB REPORT

Audio Amplifier (STEREO)

Aim → To construct a stereo audio amplifier circuit and demonstrate its functioning.

Components used →

1) LM386 Low Voltage Audio Power Amplifier IC (x2)
2) 7-10 W Speaker (x2)
3) Audio jack
4) 4-12 V DC Input
5) 10 μF capacitor (x6)
6) 4.7 nF capacitor (x2)
7) 220 μF, 16V capacitor (x2)
8) 100 μF capacitor (x2)
9) 10 Ω resistor (x2)
10) 104 pF capacitor (x2)
11) 1 kΩ Potentiometer

Experimental setup & functioning

1) **LM386 Low Voltage Audio Power Amplifier IC**

→ It has the function of a low-voltage audio amplifier with gain from 20 to 200. It has 8 pins, whose functions are listed below:

a) PIN 1, 8 → Gain controlling pins
⇒ They are used to adjust gain of amplifier.

b) PIN 2,3 → Input pins

⇒ PIN 2 is the negative input terminal connected to ground.

PIN 3 is the positive input terminal connected to the device.

c) PIN 4, 6 → Power supply pins

⇒ PIN 4 is connected to ground.

PIN 6 is connected to positive terminal of power supply. (4–12 volts)

PIN 5

d) Output pin → The amplified sound signal is output from this pin. To remove any high sudden frequencies / noise an Rc filter with $R = 10\,\Omega$ and $C = 4.7\,nF$ is used.

e) PIN 7

Bypass terminal → This terminal can be left open or grounded using 10 μF capacitor for stability.

2) Speaker → Outputs the amplified audio signal which is connected across 220 μF capacitor and ground.

3) Audio jack → Used for taking input from phone or laptop.

4) 1K Variable resistor

→ Adjusts the magnitude of input signal.

Results

1) For $f = 528$ Hz (Input signal)

$V_i = 0.055\,V$

$V_o = 11.14\,V$

$\Rightarrow$ Gain $= \frac{V_o}{V_i} = \frac{11.14}{0.055} \approx 202.54$

Conclusion

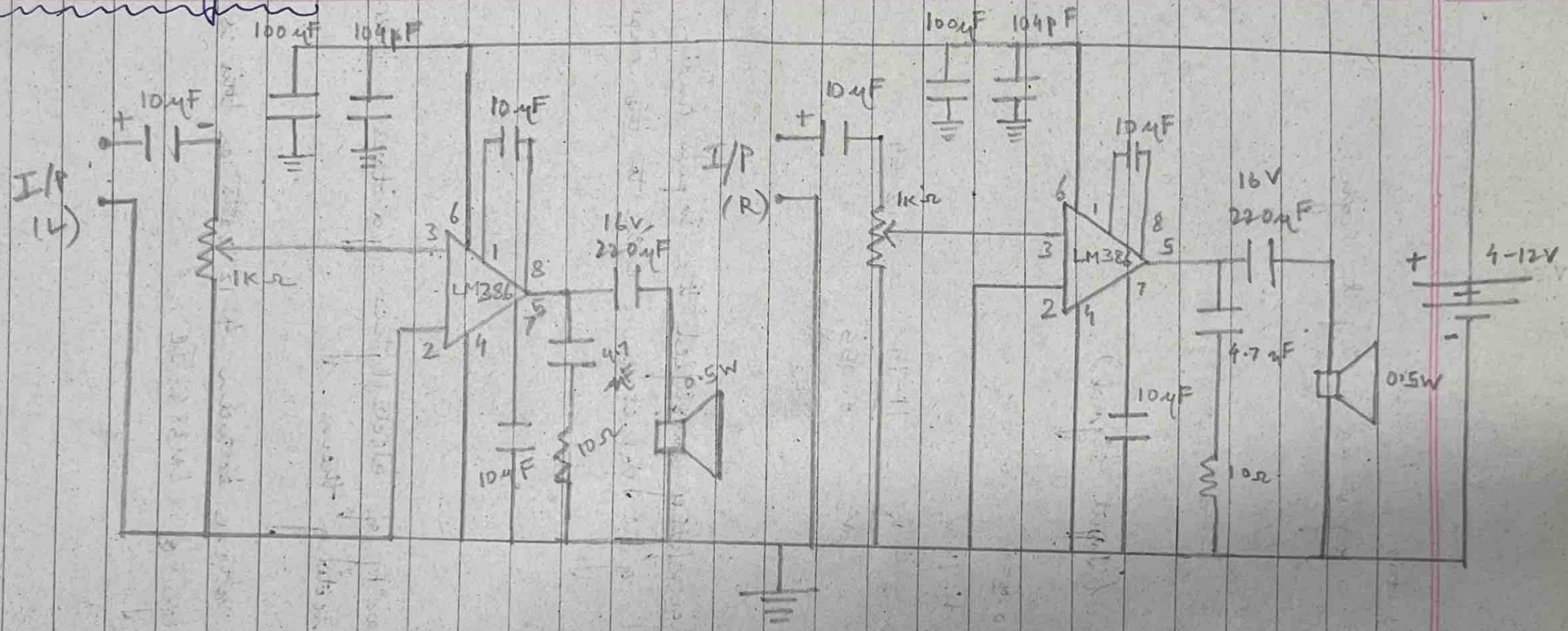
→ The circuit successfully amplified the inputs audio signal. The experimental gain values were close to the expected gain values.

Precautions

→ Ensure that polarity of electrolytic capacitors is taken care of while connecting them.

→ Keep the input voltage between 4-12 volts as this is the operational range of LM386 IC.

Circuit Diagram



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