ECE101: Basics of Electrical and Electronics Circuits

Mini Project:1

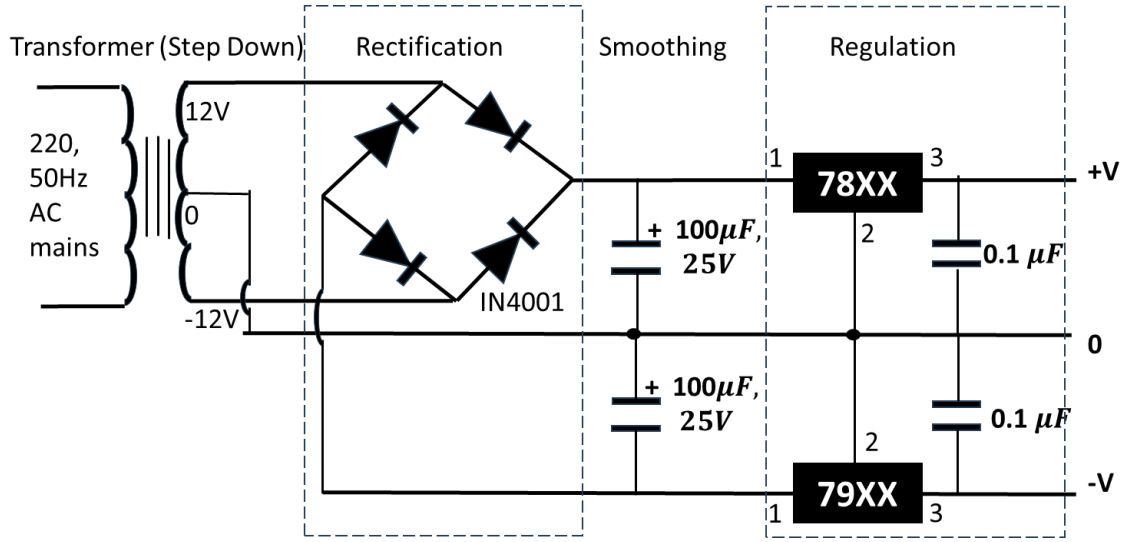
DC power supply

An adapter is required for charging a cell phone, battery, or other DC load from a home AC supply. What is the process for turning high-voltage AC into DC? A rectifier, also referred to as an AC to DC converter, is required.

The domestic supply of 220 Volt & 50 Hertz AC is down converted to 12 Volt 50 Hertz AC using step down transformer. This 12 Volt AC is applied to the diode bridge rectifier circuit. The output of bridge rectifier is 12 Volt DC. But this DC has variation which is known as ripples. To minimise the ripple a filter is used hence 100 micro farad electrolytic capacitor is connected across the output of rectifier. This output is 12 Volt DC supply.

To regulate the supply for any given circuit, a voltage regulator is placed at the output of filter. The regulator IC 7805 provides regulated voltage of + 5 Volts and IC 7905 provides regulated voltage of -5 Volts.

Use the components and make the circuit on breadboard, as shown in figure.



Observations:

Observe the voltage across the rectifier o/p and measure it.

Observe the voltage across the filter o/p and measure it.

Observe the voltage across the regulator 7805 o/p and measure it.

Connect the LEDs as load across this regulator o/p.

Observe the voltage across the regulator 7905 o/p and measure it.

Connect the LEDs as load across this regulator o/p.

Results:

Conclusion: It must be in your words and be based on your understanding/ learning in the experiment.