Project Title: **Variable DC Power-supply**

# **Apparatus:**

Voltage regulator IC, LM317, 2 resistors, 1k ohm and 220 ohm, Potentiometer, 3 capacitor, 2200uf, 1uf and 0.1uf, Diode bridge rectifier, 2 diodes , Step down transformer 220V to 30V.

# **Working principle:**

A Variable DC Power Supplyis very important for electronics projects, prototyping and hobbyists. For smaller voltages, we normally use batteries as a reliable source. Instead of using batteries, which have a limited lifetime, a variable DC power supply can be used which is implemented in this project. It is a robust, reliable and easy to use variable DC power supply. The working of the circuit is as follows. A transformer is used to step down the AC supply to 24V at 2A. A bridge rectifier is used to convert this voltage to DC. This pulsating DC is filtered using the capacitor to get a clean DC and is given to LM317 which is a variable voltage regulator IC. In order to vary the output voltage, two variable resistors of values 1KΩ and 10KΩ are used. 10KΩ POT is used for large change in voltage while 1KΩ POT is used for fine adjustments. Depending on the settings of the POT, the ADJ pin of LM317 receives a small portion of the output voltage as feedback and the output voltage is varied. A capacitor is used at the output of the voltage regulator so that the output voltage doesn’t have any spikes. With the help of this variable DC power supply, the output voltage can be varied from 1.2V to 30V at a current of 1A. This circuit can be used as reliable DC source and acts as a replacement to batteries. It is important to attach the voltage regulator IC LM317 to a heat sink as it tends to get hotter during operation.

# **Circuit diagram:**