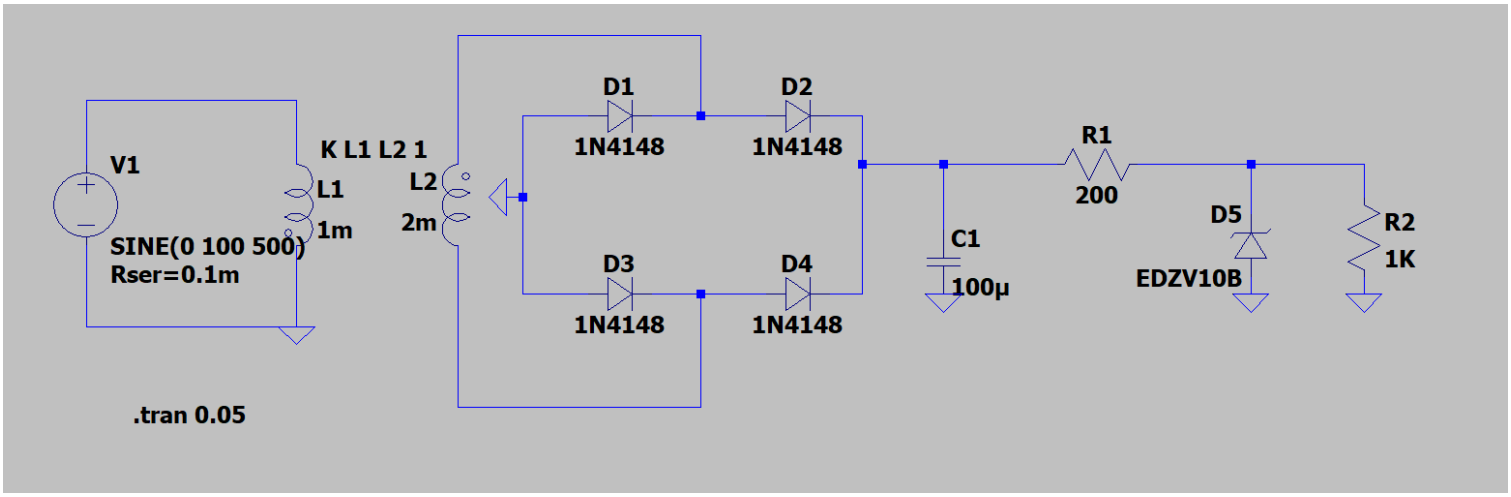
SIMULATION OF SYSTEM-DC POWER SUPPLY



CIRCUIT COMPONENTS :

- Ac voltage source
- Transformer
- 4 X 1N4148 diode
- 1 x 100µ F capacitor
- 200 Ω , 1k Ω resistors
- 1 x EDZV10B Zener diode

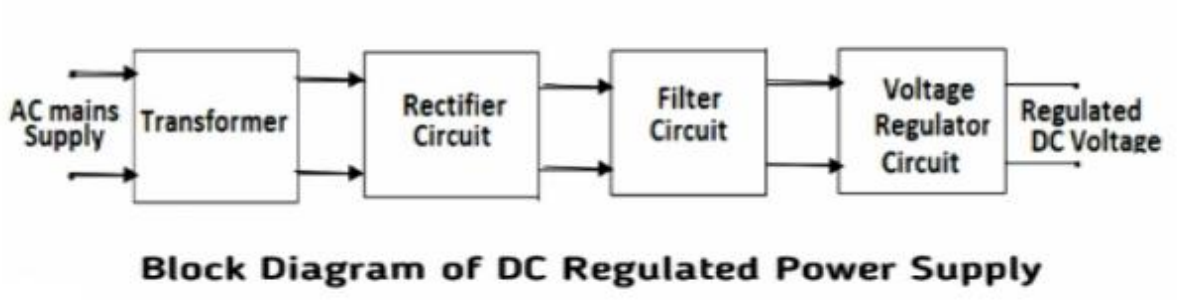
DEFINITION:

A DC power supply circuit converts alternating current (AC) to direct current (DC) suitable for powering electronic devices and circuits.

NECESSITY:

DC is foundational to modern electronics and electrical engineering. Unlike AC, where electric charge flow periodically reverses direction, DC provides a unidirectional flow of electrons.

OVERVIEW:

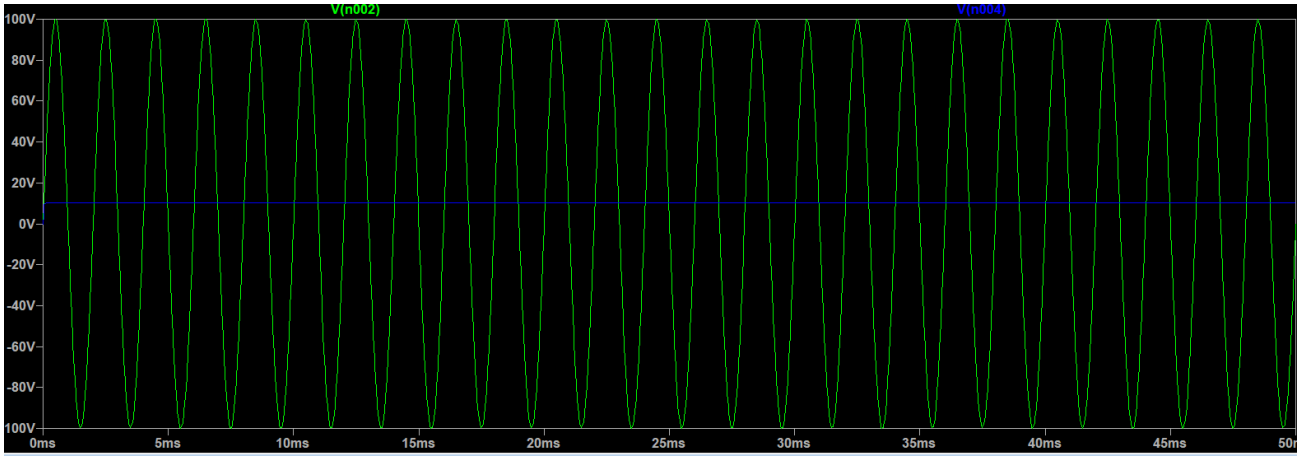


Block Diagram of DC Regulated Power Supply

It involves several stages that include:

1. **Transformer**: steps up or down the input AC voltage to a desired level.
2. **Rectifier**: converts AC to pulsating DC.
3. **Filter**: Smoothens the pulsating DC into a more stable DC voltage.
4. **Voltage regulator**: Maintains constant DC output voltage despite variations in input or load conditions.

ANALOG WAVEFORMS:



The green sine signal indicates the input signal.

The blue linear signal indicates the output signal.

APPLICATIONS:

DC power supplies are widely used in various applications, including:

- Charging batteries
- Powering electronic devices (like computers and mobile phones)
- Providing power for industrial equipment