

Exp.No.:

Date :

RECTIFIERS WITH FILTERS (Full wave & Half wave)

AIM : To determine the ripple factor and load regulation for Half wave and Full wave rectifiers with filters.

APPARATUS :

S.No.	Name of the Apparatus	Range	Quantity
1.	Transformer	12V-0-12V	1No.
2.	BY127	-	2No.
3.	Ammeter	0-100mA	1No.
4.	Voltmeter	0-20V	1No.
5.	Capacitor	1000 μ F	1No.
6.	Rheostat	-	1No.

CIRCUIT DIAGRAM:

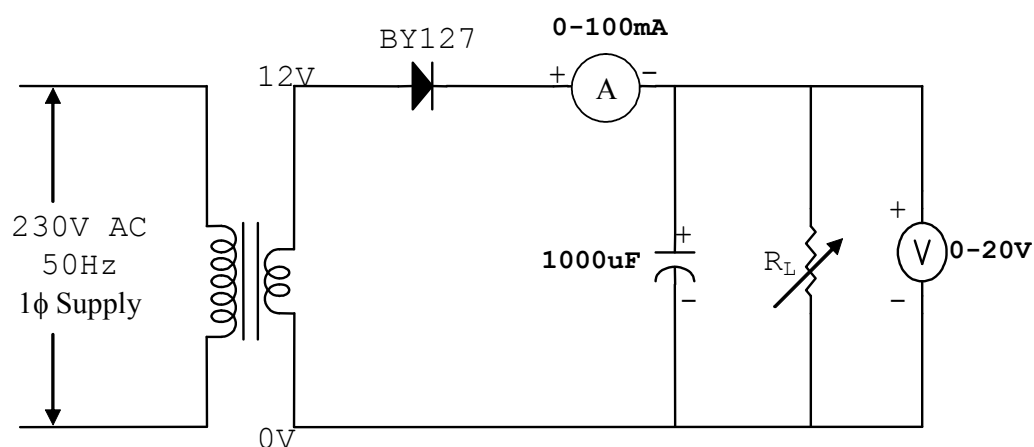


Fig a: Half-wave rectifier with filter

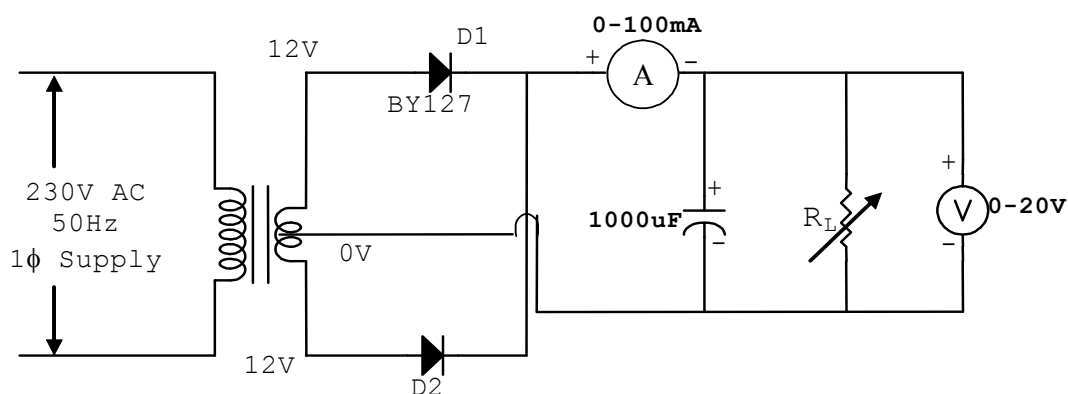


Fig b: Full-wave rectifier with filter

Exp.No.:

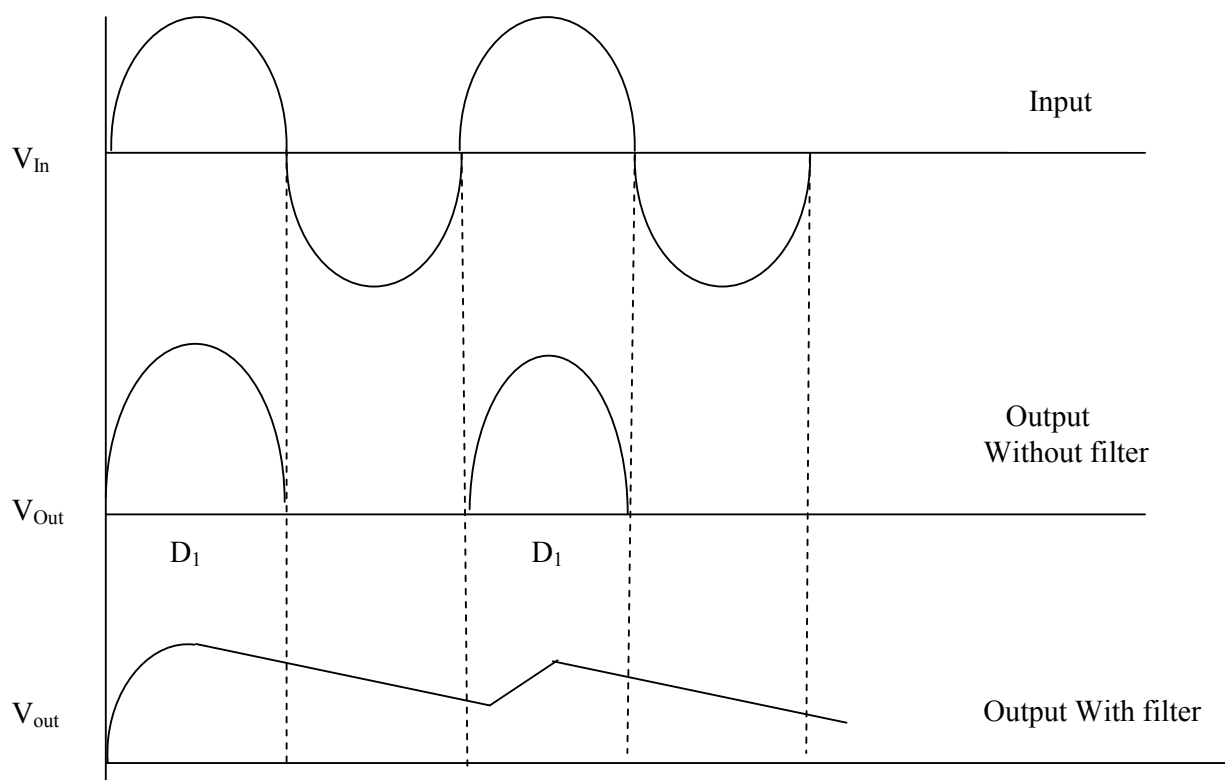
Date :

PROCEDURE:

1. Connect the circuit for Half wave rectifier with filter.
2. Vary the load current in steps from 0 to 100mA and note down V_{DC} and V_{AC} across the load.
3. Also observe the input and output waveforms on CRO.
4. Repeat the steps 1 to 3 for full wave rectifier with filter.
5. Plot regulation characteristics by taking I_L on X-axis V_{DC} on Y-axis.
6. Calculate percentage regulation using

$$\% \text{ Regulation} = \frac{V_{NL} - V_{FL}}{V_{FL}} \times 100$$

where V_{NL} : output DC voltage when load current is zero
 V_{FL} : output DC voltage when load current is maximum

INPUT AND OUTPUT WAVEFORMS: HWR

Date :

The figure consists of three vertically aligned graphs sharing a common horizontal time axis. The top graph, labeled "Input", shows a sinusoidal voltage V_{in} oscillating between positive and negative values. The middle graph, labeled "Output Without filter", shows the output voltage V_{out} as a full-wave rectified sine wave, where the negative half-cycles of the input are inverted to become positive. The peaks of this waveform are labeled D_1 and D_2 in alternating sequence. The bottom graph, labeled "Output With filter", shows the output voltage V_{out} after passing through a filter. This waveform is a smoothed version of the rectified input, where the sharp peaks are rounded off, and the troughs are filled in, resulting in a continuous, slightly rippling positive voltage.

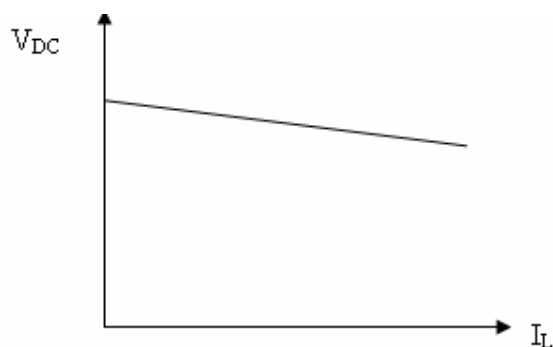
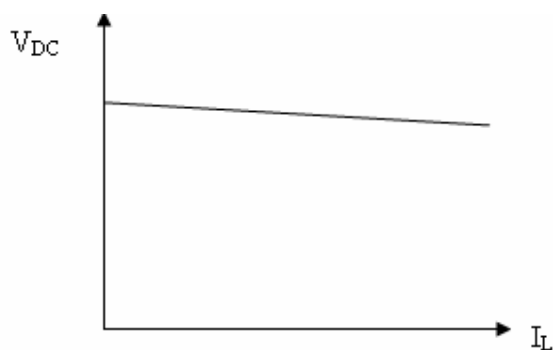
b) Full Wave Rectifier

[illegible][illegible]

Exp.No.:

Date :

$$\% \text{ Regulation} = \frac{V_{NL} - V_{FL}}{V_{FL}} \times 100 =$$

MODEL GRAPHS: Regulation Characteristics**Half Wave Rectifier with filter****Full Wave Rectifier with filter****RESULTS:**

1. Ripple factor of Half Wave Rectifier with filter =
2. % Regulation of Half Wave Rectifier with filter =
3. Ripple factor of Full Wave Rectifier with filter =
4. % Regulation of Full Wave Rectifier with filter =