Course Code:ETE 203

Course Title: Electronics Device and Circuit – I Lab

Experiment No: 06

Experiment Title: Study of Full wave rectifier.

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Theory:

A full wave rectifier is a device that convert an alternating signal, with positive and negative signal components, to one in which all parts of the signal are positive. In a full wave bridge rectifier circuit, four diodes are required is an organized way and two earthling points are there. The diodes which are arranged in series pairs with only two diodes conducting current during each of half cycle. That's why, the graph have curves for both positive and negative signal.

Apparatus required:

1. Step down Transformer (220V, AC, 50Hz)
2. Resistor (10kΩ)
3. CRT Oscilloscope.
4. Digital multi-meter.
5. Breadboard
6. Capacitor (C1= 22µF)
7. Capacitor (C2=470µF)
8. Wires as required

Picture of circuit:
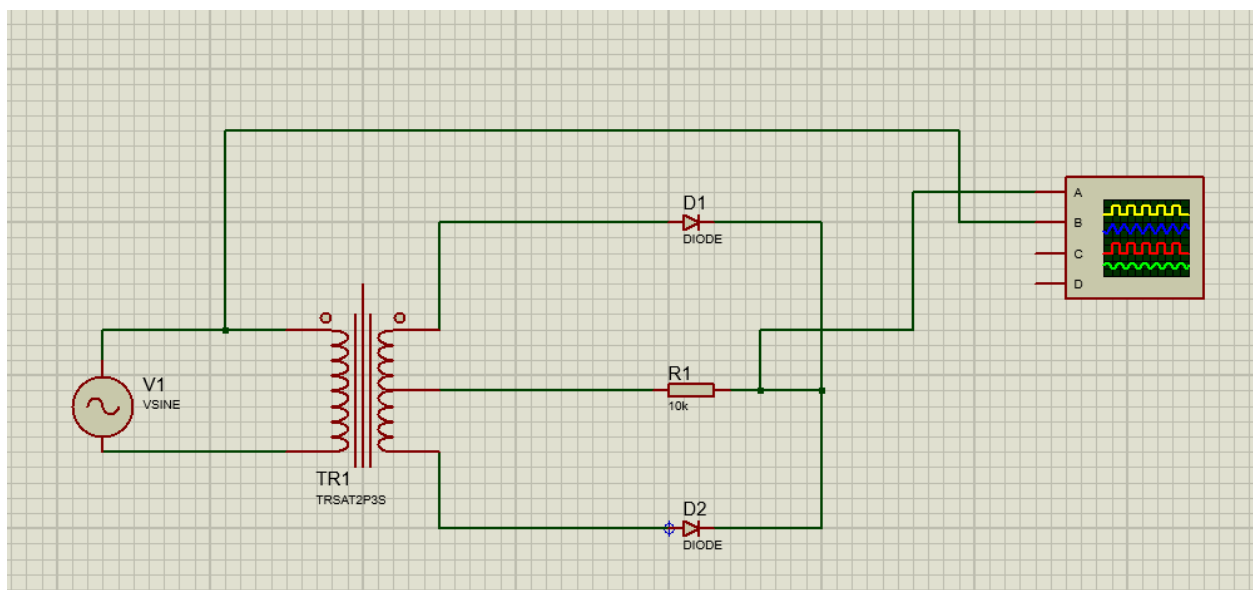
Procedure:

- Connect the circuit as shown in the circuit diagram, for full wave rectifier circuit as shown in fig in which RL = 10 kΩ.

- Full wave rectification is the process by which alternating current AC is converted into direct current DC.

- Measure the peak value of the output signal and write it down.

- Wave shapes of the input and output are observed through the oscilloscope.

- Measure the time during which the output signal remains zero and writes it down.

- Use multimeter to measure the DC value of the output signal and write it down.

- Connect a 22µF capacitor across the resistor. Observe the output in oscilloscope and measure the DC value of output using multimeter.

- Connect a 470 µF capacitor across the resistor. Observe the output in oscilloscope and measure the DC value of output using multimeter.

Graph:
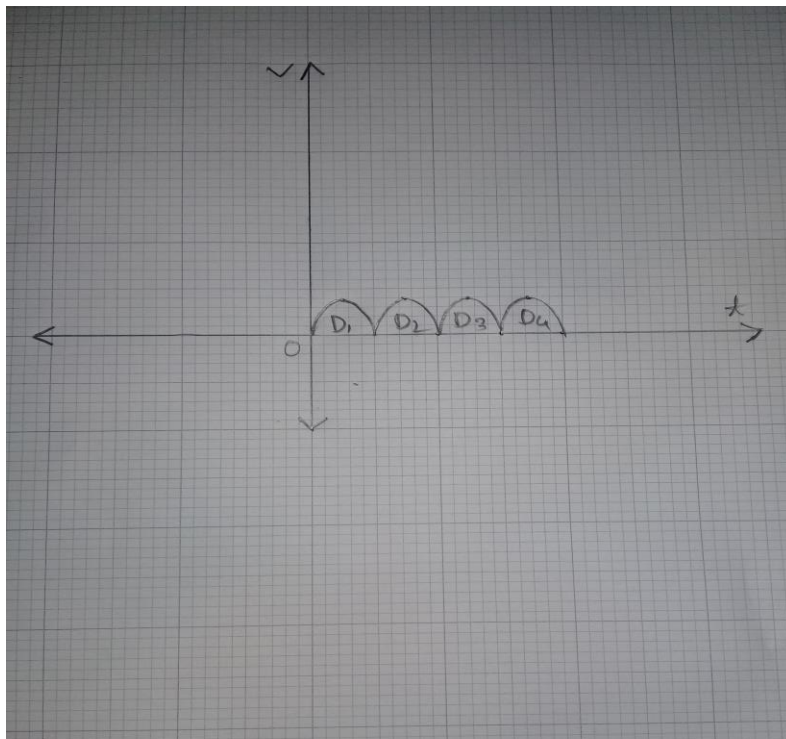
Full Wave rectification:

No. of Reading	Load Resistance RL (Ω)	Output Voltage (V0)		Ripple factor $r=\sqrt{\dfrac{Vrms\,2-Vdc\,2}{Vdc\,2}}$
		$\mathbf{V_{dc}}$	$\mathbf{V_{rms}}$	
1	100	63.66	70.71	0.48
2	500	318.31	353.55	0.48
3	1K	636.6	707.106	0.48

Discussion:

In this experiment we are going to see how a full wave rectifier converts an alternating signal, with positive and negative signal components, to one in which all parts of the signal are positive. After placing four diodes in an organized way in a full wave bridge rectifier circuit consisting of two earthing points. The diodes should be placed in a way that current should conduct during each of every half cycle.