



**Course Code:ETE 203**

**Course Title: Electronics Device and Circuit – I Lab**

**Experiment No: 05**

**Experiment Title: Study of Full wave rectifier.**

**Submitted By: (Group 3)**

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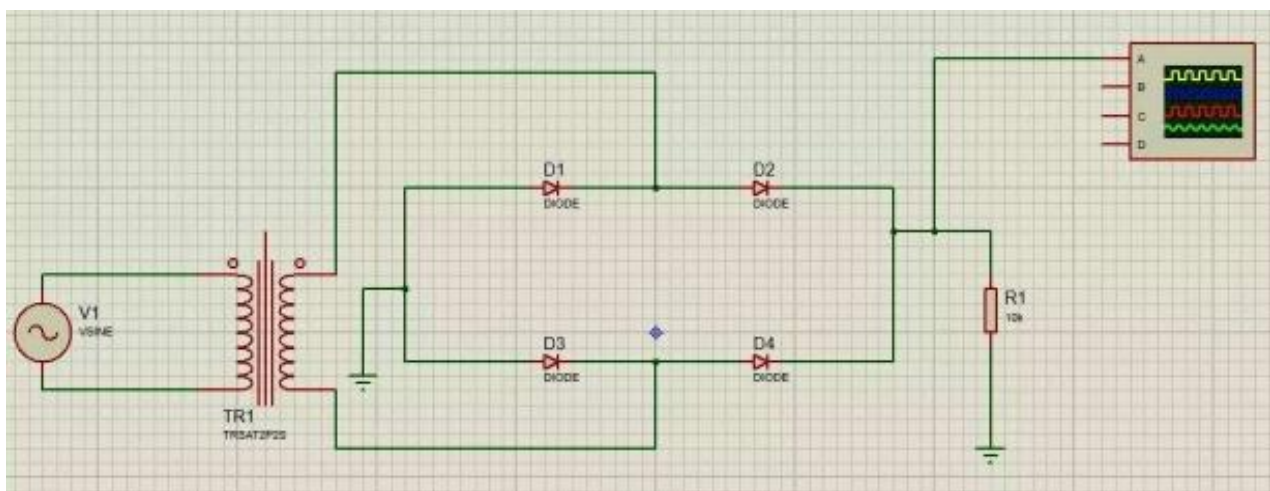
## Theory:

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 in an organized way and two earthing 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 (10k $\Omega$ )
3. CRT Oscilloscope.
4. Digital multi-meter.
5. Breadboard
6. Capacitor (C1= 22 $\mu$ F)
7. Capacitor (C2=470 $\mu$ F)
8. Wires as required

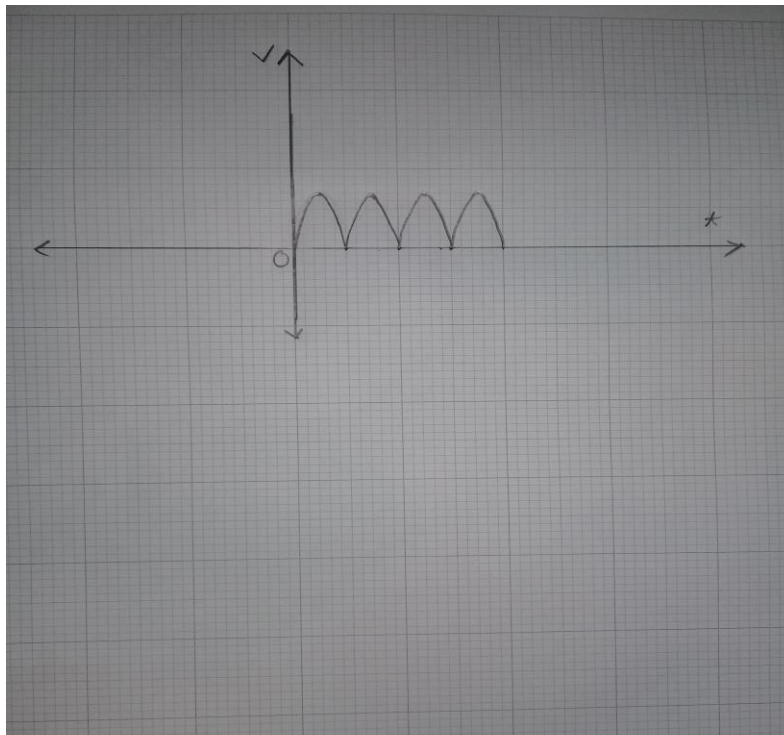
## Picture of circuit:



## Procedure:

- Connect the circuit as shown in the circuit diagram, for full wave rectifier circuit as shown in fig in which  $R_L = 10\text{ k}\Omega$ .
- 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  $22\mu\text{F}$  capacitor across the resistor. Observe the output in oscilloscope and measure the DC value of output using multimeter.
- Connect a  $470\mu\text{F}$  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 $R_L (\Omega)$	Output Voltage (V0)		Ripple factor $r = \sqrt{\frac{V_{rms}^2 - V_{dc}^2}{V_{dc}^2}}$
		$V_{dc}$	$V_{rms}$	
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.