

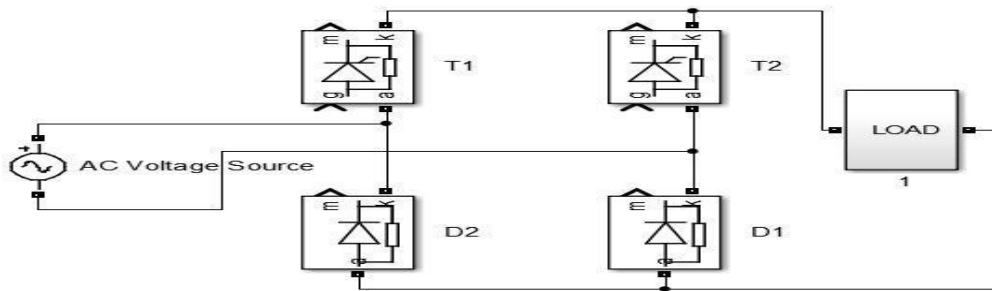
Experiment No.- 4

Objective of the Experiment: To Study the 1-Phase Semi-converter (Symmetrical) Rectifier with R and Motor load.

Equipment Needed:

1. Sciencetech 2700 Trainer Kit.
2. Firing Circuit unit.
3. Resistive Load.
4. Patch Cords.
5. DSO.

Circuit Diagram:



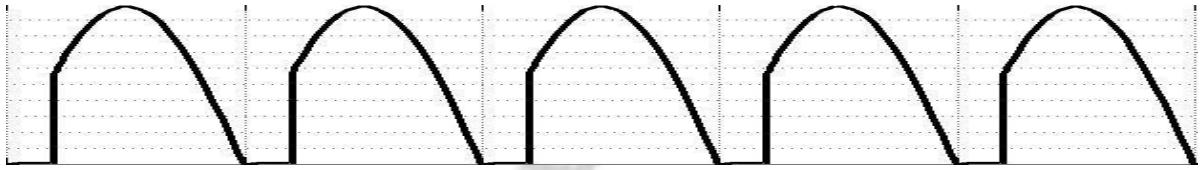
Note: Gate pulse will be given by firing circuit unit internally.

Procedure:

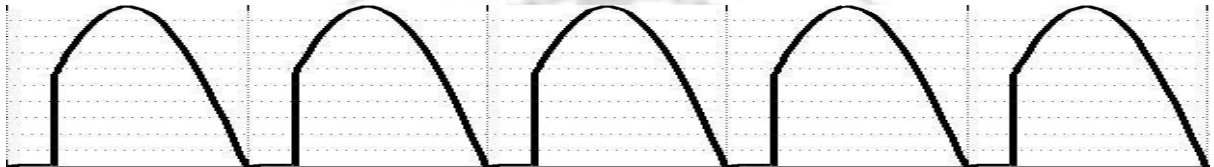
1. Make the connections as per the given circuit diagram.
2. Give the gate pulses from the firing circuit unit to the SCR assembly carefully.
3. Connect the given **resistive** and **motor load** one by one.
4. Connect the DSO probes and multi-meter across the load.
5. Make sure the connection is **OK** and patch cords are **not loose**.
6. Switch on the main supply.
7. Switch on the firing circuit unit and DSO.
8. Vary firing angle and take the required readings from the DSO and multi-meter.
9. Switch off the firing circuit unit and main supply after completing the experiment.
10. Calculate the desired results from the observed data.

Expected Output Voltage Waveforms:

For Resistor Load:



For Motor Load:



Observation Table:

V _{peak} (V _m) = _____ V						
Sl No.	Firing Angle (α)	Extinction Angle (β)	Conduction Angle (γ)	Average Output Voltage (V _o) (Volt)		% Error
				V _o (Calculated)	V _o (Measured)	
1.						
2.						
3.						
4.						
5.						

Calculations:

1. For Resistor Load:

$$V_o = \frac{2V_m}{\pi} \cos\alpha$$

2. For Motor Load:

$$V_o = \frac{2V_m}{\pi} \cos\alpha$$

Discussion:
