

HALF WAVE AND FULL WAVE RECTIFIER

AIM:

To simulate the following circuit Proteus

i) Half wave rectifier

ii) Full wave rectifier

APPARATUS REQUIRED:

Laptop with Proteus software

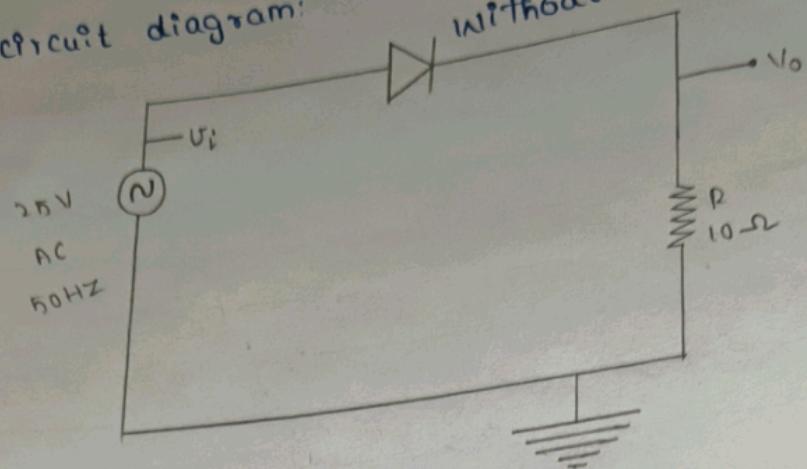
THEORY:

A rectifier is a circuit that converts alternating current (AC) into direct current (DC)

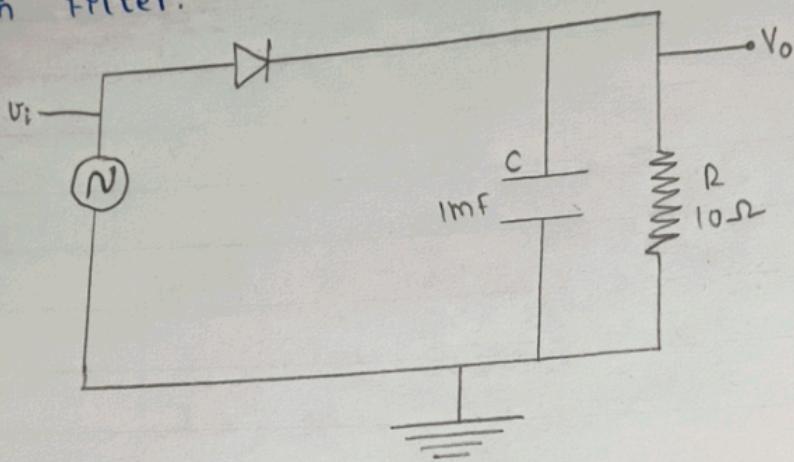
HALF WAVE RECTIFIER:

Half Wave rectifier conducts only during positive half cycle. During positive half cycle the diode conducts and the output voltage is equal to the input voltage. During negative half cycle, the diode does not conduct and the output voltage is equal to zero.

Half wave rectifier:
circuit diagram:



with filter:



TABULATION:

Input Voltage		Output Voltage			
		without Filter		with Filter	
$v_m(v)$	$t(ms)$	$v_m(v)$	$t(ms)$	$v_m(v)$	$t(ms)$
100V	20ms	100V	10ms	100V, 85V	5ms, 25ms

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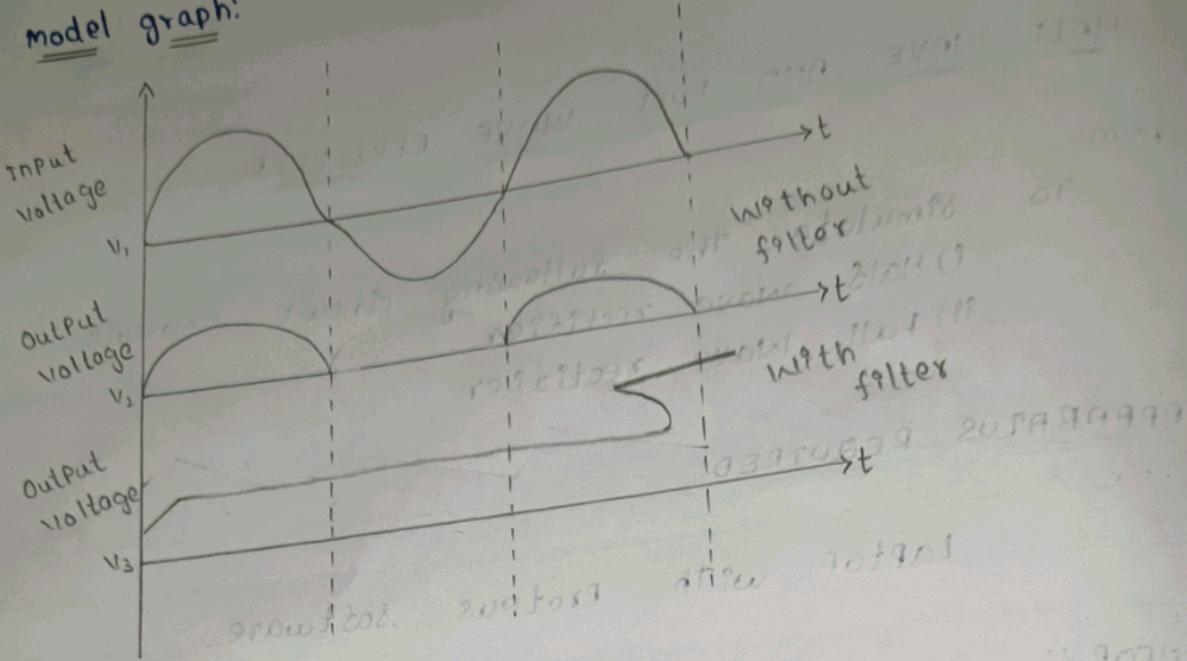
FULL WAVE RECTIFIER:

Full wave rectifier conducts during both positive and negative half cycles. During positive half cycle, the negative half cycle, the output voltage is equal to negative of the input voltage. The output of the rectifier circuit is impure DC. In order to get pure DC the output is filtered by capacitor filter.

PROCEDURE:

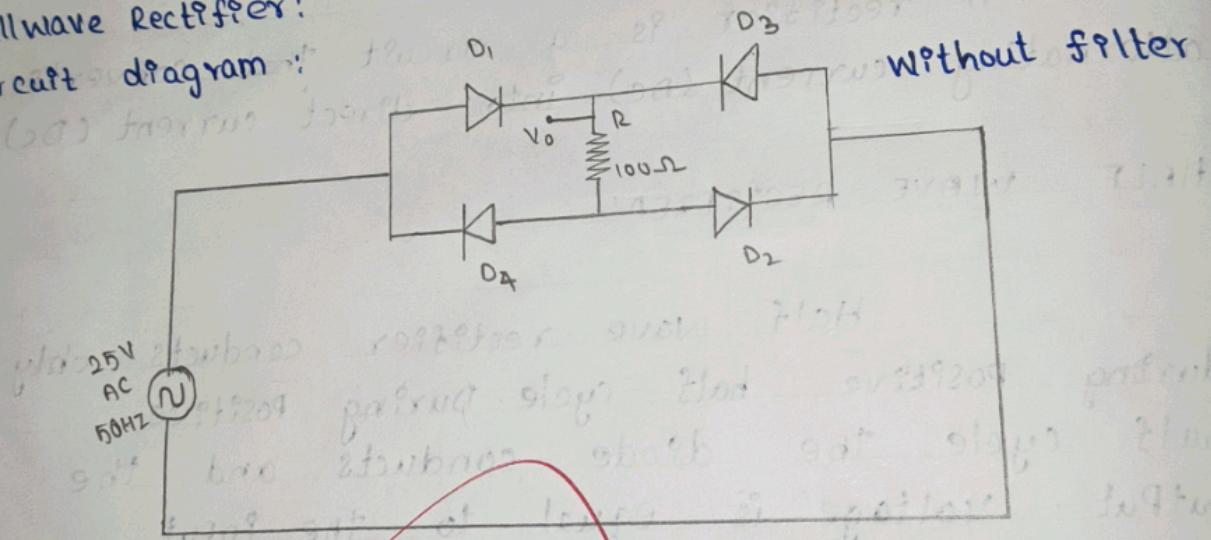
1. Drag the required components from the Proteus library.
2. Connect the components as per the circuit diagram.
3. measure the input and output voltages and note in tabulation.
4. Draw the graph for input and output voltages

model graph:

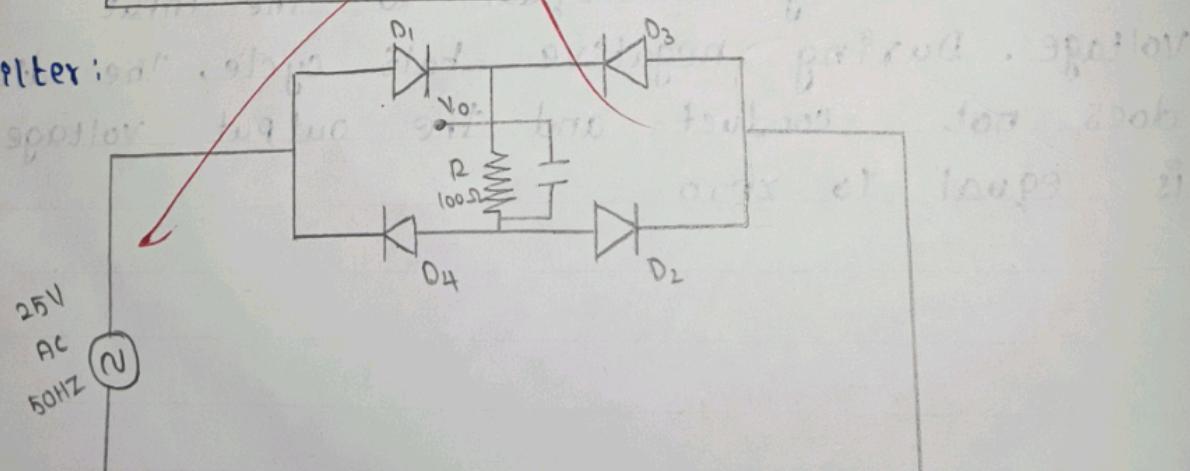


Fullwave Rectifier:

circuit diagram:



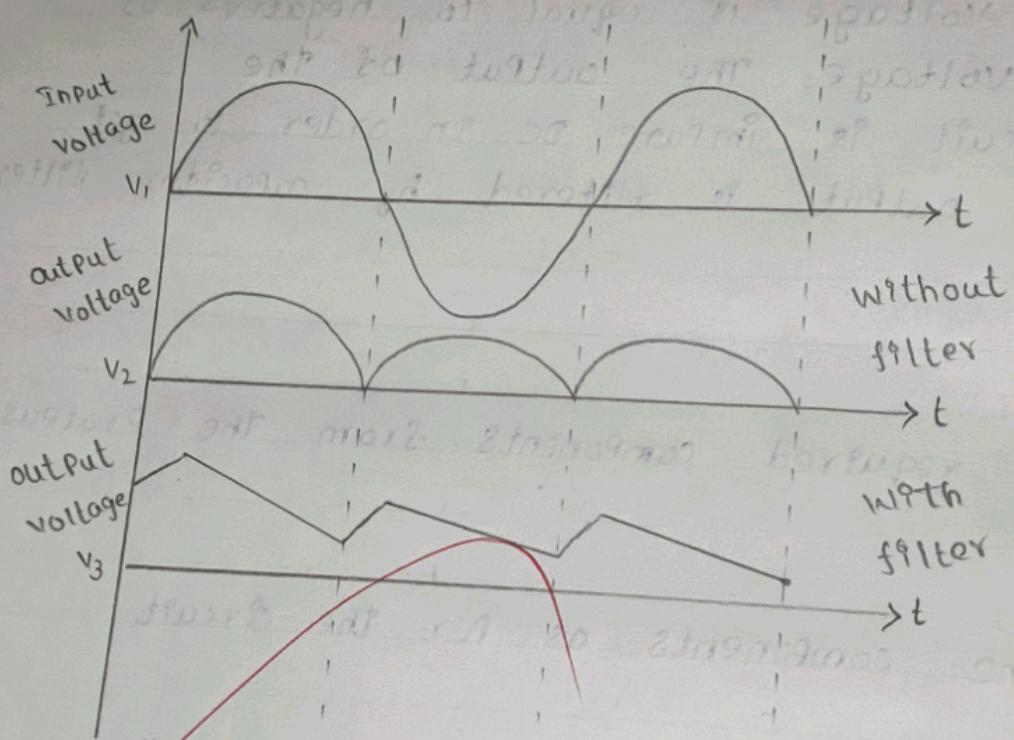
With filter:

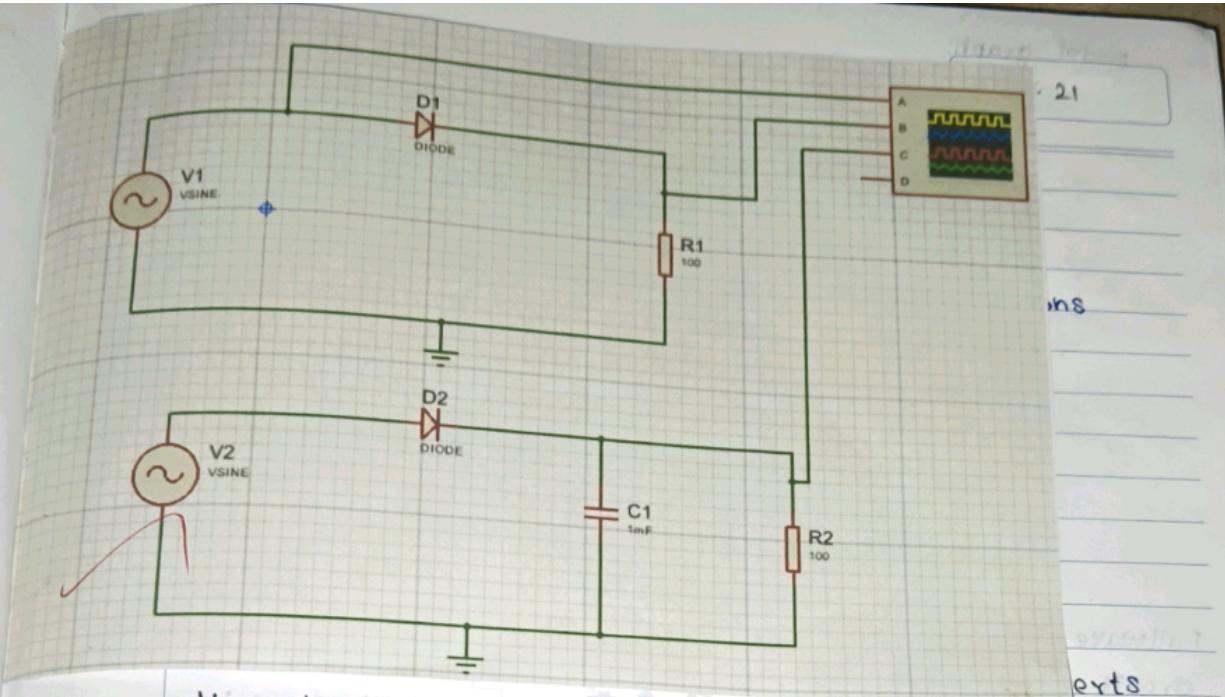


TABULATION:

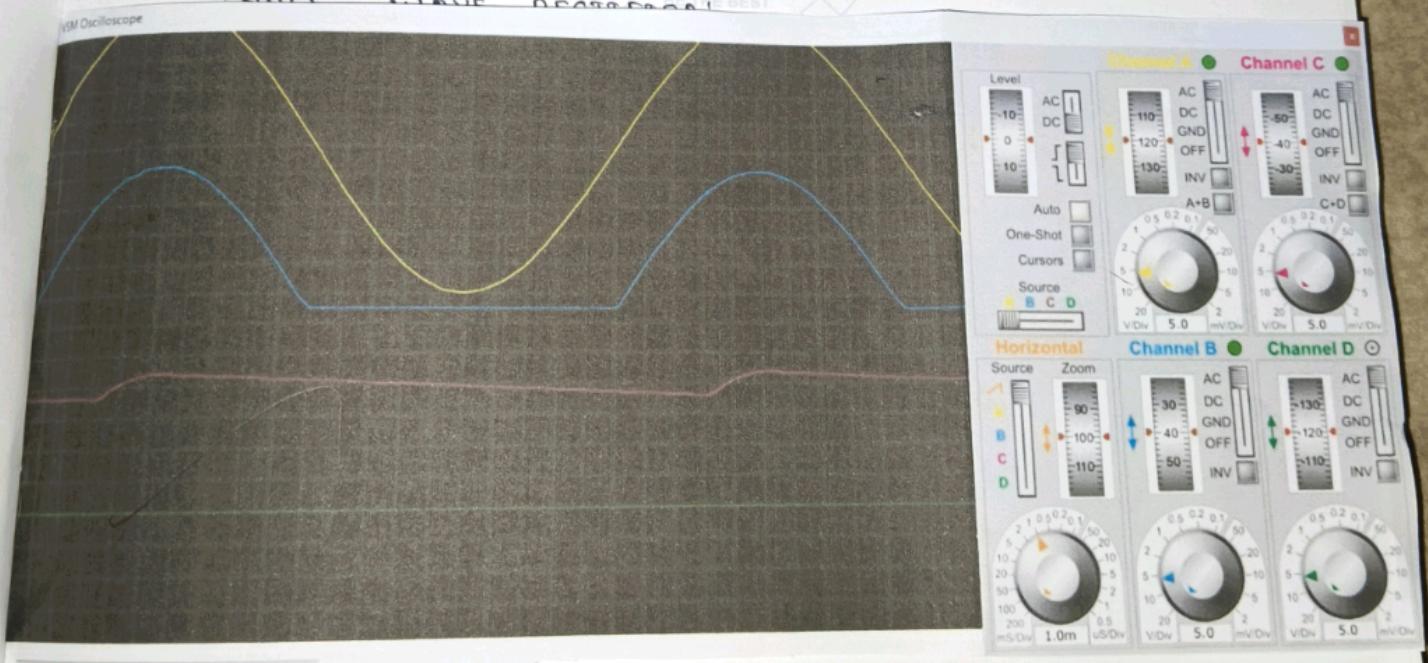
Input Voltage	Output Voltage				
	Without filter		With filter		
$V_m(V)$	$t(ms)$	$V_m(V)$	$t(ms)$	$V_m(V)$	$t(ms)$
50V	20ms	50V	5ms	50V, 46V	5ms, 14ms

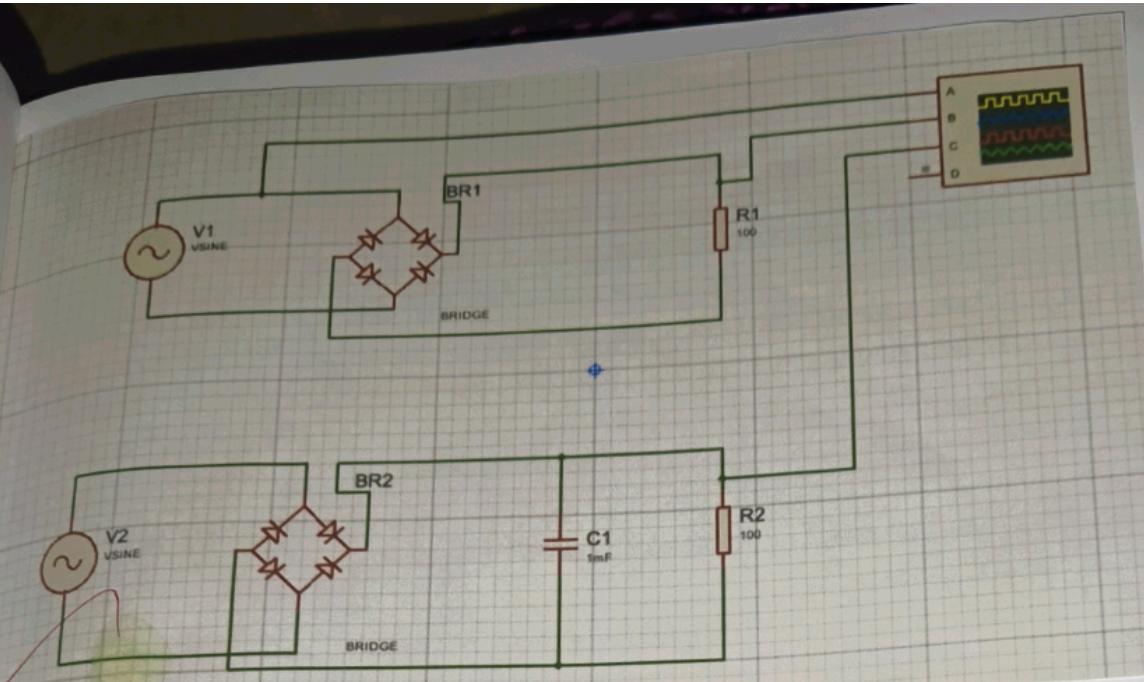
MODEL GRAPH:





alternating current (AC) into direct current (DC)

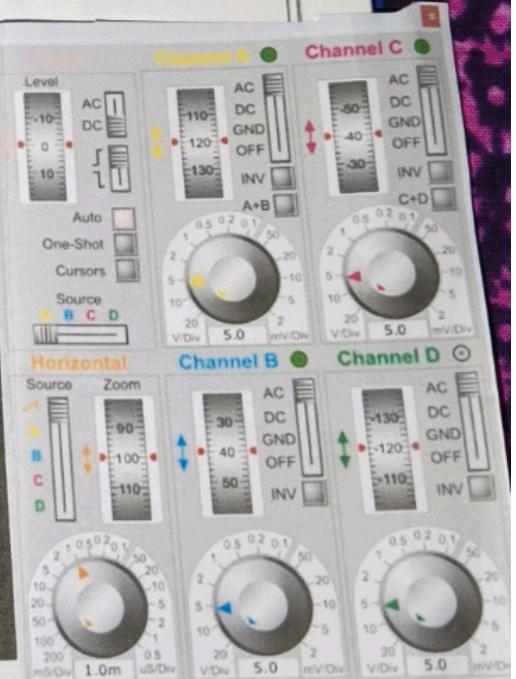
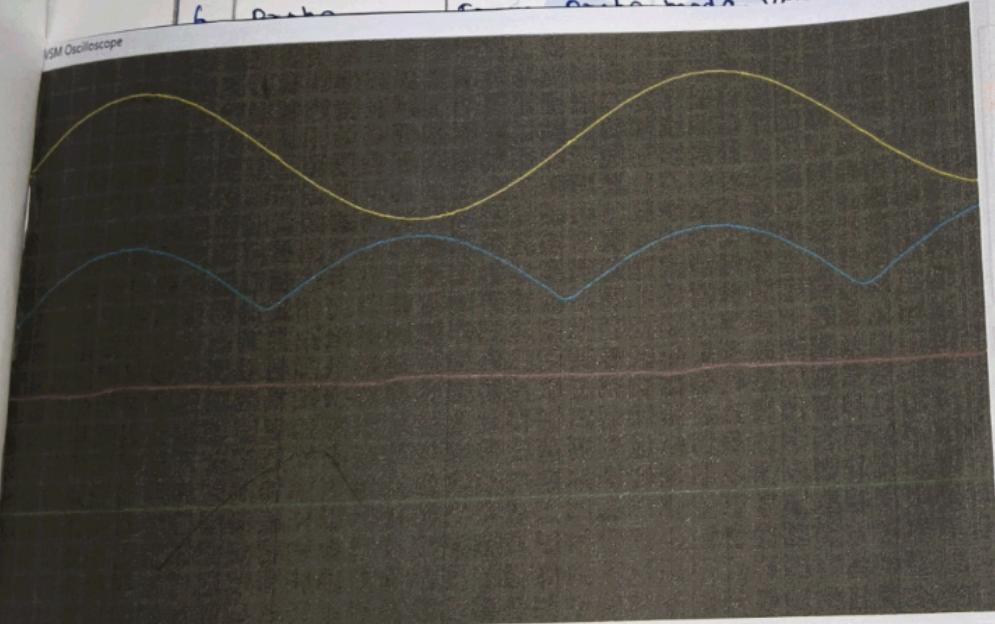




5. Ground

from terminal mode

1 micro F



COMPONENTS REQUIRED:

S.NO	COMPONENTS	PROTEUS	SPECIFICATION
1.	AC Supply	VSINE	Amplitude = 100V Frequency = 50Hz
2.	Diode	Generic diode	
3.	Resistor	Analog resistor primitive	100 Ω
4.	Capacitor	Generic non electrolytic	
5.	Ground	From Terminal mode	
6.	Probe	From Probe mode - voltage	
7.	Graph	From Graph mode - analogue	

~~RESULT:~~

simulation of both half-Wave and full-Wave rectifier was successful.